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ABSTRACT

This collection of 22 papers is organized by the five conference topics. "Part 1: Effects of the Perkins Act on Policy and Practice" contains five papers: "Federal Legislation as Rorschach Test: Methodological Issues in Assessing the Effects of the 1990 Perkins Act on States and Localities" (Grubb); "Effects of the 1990 Perkins Act on State Administration and Policy" (Herriage); "A New Vision for Vocational Education: Assessing Implementation of the 1990 Perkins Act" (Rosenstock); "The Effects of Federal Requirements Regarding Articulation between Secondary and Postsecondary Vocational Education Programs" (Peters, Jr., Makin); and "Views of Assessment of the 1990 Perkins Act" (Grimsley). "Part 2: Funding Issues" consists of four papers: "Analyzing Federal Expenditures for Vocational Education Program Improvement" (Hoachlander); "Return of the Debate: Can Federal Policy Improve Vocational Education for Special Populations?" (Muraskin); "Design for the Congressionally Mandated Study of the Formula for Distributing Federal Vocational Education Funds to the States" (Barro); and "1990 Perkins Act Funding Issues at the Postsecondary Level" (Zins). "Part 3: Student Outcomes" has five papers: "Assessing Academic Outcomes in Vocational Education" (Sticht); "The Success of School-To-Work Transition" (Stone, III); "The Relevance of Vocational Education for Subsequent Employment" (Bailey); "Occupations and Earnings of Former Vocational Education Students: Research Design Issues" (Stevens); and "Vocational Education and the American Job Market: An Employer's Perspective" (Martin). The four papers in "Part 4: General and Special Populations" are as follows: "Individuals with Special Needs in Vocational Education: Considerations for the National Assessment" (Phelps); "Recommended Directions: (1) The Effects of Flexibility on Delivery of Services to Special Populations and (2) Participatory Planning" (Maddy-Bernstein); "Principal Issues Regarding Native Americans to Be Addressed by the National Assessment of Vocational Education" (Slater); and "Special Considerations in Assessing Vocational Education in Corrections" (Coffey). "Part 5: Academic and Vocational Issues" contains four papers: "Teacher Preparation, Qualifications, and Demand" (Finch); "Performance Standards, Accountability, and the Quality of Vocational Education" (Hill); "Integrating Academic and Vocational Education: Guidelines for Assessing a Fuzzy Reform" (Stasz, Grubb); and "Impact of Education Reform on Vocational Education" (Strickland). (YLB)

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Papers Presented at the Design Conference for the National Assessment of Vocational Education

Washington, D.C.
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This publication is a collection of the papers presented at the National Assessment of Vocational Education Design Conference, held March 13–15, 1991 in Washington, D.C. The Design Conference, sponsored by OERI, was intended to address specific issues in the assessment and in the 1990 Perkins Act, which mandated the assessment.

A summary of the presentations and discussions at the conference appear in a companion publication, **Summary Proceedings of the Design Conference for the National Assessment of Vocational Education.**

Subsequent reports will set forth the findings of the assessment.

The National Assessment of Vocational Education was mandated by the Carl D. Perkins Vocational and Applied Technology Act of 1990. The conduct of the National Assessment of Vocational Education and the preparation of this report were sponsored by the U.S. Department of Education, Office of Educational Research and Improvement as mandated in Section 403(a)(1) of the Act. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the opinions of the U.S. Department of Education.

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Papers Presented at the Design Conference for the National Assessment of Vocational Education

Washington, D.C.
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Contents

INTRODUCTION 1

PART 1: EFFECTS OF THE PERKINS ACT ON POLICY AND PRACTICE

Federal Legislation as Rorschach Test: Methodological Issues in Assessing the Effects of the 1990 Perkins Act on States and Localities

W. Norton Grubb 7

Effects of the 1990 Perkins Act on State Administration and Policy

Phyllis A. Herriage 25

A New Vision for Vocational Education: Assessing Implementation of the 1990 Perkins Act

Lawrence Rosenstock 35

The Effects of Federal Requirements Regarding Articulation Between Secondary and Postsecondary Vocational Education Programs

Roy Peters, Jr. and Richard C. Makin 45

Views on Assessment of the 1990 Perkins Act

Joseph W. Grimsley 59

PART 2: FUNDING ISSUES

Analyzing Federal Expenditures for Vocational Education Program Improvement

Gary Hoachlander 69

Return of the Debate: Can Federal Policy Improve Vocational Education for Special Populations?

Lana D. Muraskin 77

Design for the Congressionally Mandated Study of the Formula for Distributing Federal Vocational Education Funds to the States

Stephen M. Barro 87

1990 Perkins Act Funding Issues at the Postsecondary Level

Rosemary Sullivan Zins 99

PART 3: STUDENT OUTCOMES

Assessing Academic Outcomes in Vocational Education

Thomas G. Sticht 115

The Success of School-To-Work Transition

James R. Stone III 129

The Relevance of Vocational Education for Subsequent Employment

Thomas Bailey 145

Occupations and Earnings of Former Vocational Education Students:
Research Design Issues

David W. Stevens 157

Vocational Education and the American Job Market: An Employer's Perspective

Robert L. Martin 173

PART 4: GENERAL AND SPECIAL POPULATIONS

Individuals With Special Needs in Vocational Education: Considerations for the National Assessment

L. Allen Phelps 189

Recommended Directions: (1) The Effects of Flexibility on Delivery of Services to Special Populations and (2) Participatory Planning

Carolyn Maddy-Bernstein 205

Principal Issues Regarding Native Americans to be Addressed by the National Assessment of Vocational Education

Gerald Slater 215

Special Considerations in Assessing Vocational Education in Corrections

Osa D. Coffey 229

PART 5: ACADEMIC AND VOCATIONAL ISSUES

Teacher Preparation, Qualifications, and Demand

Curtis R. Finch 241

Performance Standards, Accountability, and the Quality of Vocational Education

Paul T. Hill 253

Integrating Academic and Vocational Education: Guidelines for Assessing a Fuzzy Reform

Cathy Stasz and W. Norton Grubb 261

Impact of Education Reform on Vocational Education

Deborah C. Strickland 275

Introduction

The National Assessment of Vocational Education was mandated by Congress in the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 (P.L. 101-392). The Office of Educational Research and Improvement (OERI) was assigned the task of conducting the National Assessment through its Office of Research. The legislation called upon OERI to address a substantial number of questions about the status of vocational education in the country and the implementation of the Perkins Act.

One of the first steps in the process of preparing the study was to call together experts in the field with the most informed opinions about the various aspects of the mandated study. They were asked to use their expertise to address three central questions:

1. **What are the principal issues and research questions to be addressed by the assessment in the presenter's particular subject area?**

2. **What are the principal data sources (e.g., computerized files, administrative records, articles, etc.) that can be used to address these issues and questions? If existing data sources are not adequate, what new data could reasonably be collected for the assessment?**

3. **What problems should be anticipated in conducting research on this subject? How can these problems be overcome or mitigated?**

The Design Conference for the National Assessment of Vocational Education was held in Washington, D.C., on March 13-15, 1991. It featured a series of panels corresponding to the subjects delineated in the legislation. In addition to the formal presentations, there was lively debate and discussion among the panel members and other participants in the well-informed audience. These presentations and discussions have been used to guide the design of the National Assessment study.

The papers in this document provided the basis for the conference presentations. They are organized by conference topic in the order in which they were presented. The contributing authors are identified below:

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Part 1:
Effects of the Perkins Act on Policy and Practice

Federal Legislation as Rorschach Test: Methodological Issues in Assessing the Effects of the 1990 Perkins Act on States and Localities

W. Norton Grubb*

In many ways, each piece of federal legislation is a Rorschach test. It has become difficult to pass any legislation without the support of several interest groups; however, since interest groups rarely agree completely on the purposes of any specific piece of legislation, the result is a hybrid of intentions with a multitude of purposes. Then different constituents and interest groups can continue to wrangle over what Congress really intended, leading to regulatory battles, implementation problems—which are nothing more than the differences between what some beneficiaries want to do and what executive agencies want them to do—and (sometimes) further congressional actions.

This is the case with the 1990 Carl Perkins Act. Congress seems to have intended substantial reform in vocational education, but the nature of that reform is not completely clear. Ever since the 1963 Vocational Education Act, Congress has used federal legislation to pursue two major purposes: to focus federal funds on students with special educational needs and to improve vocational education (Grubb, 1978). Disagreements over the nature and sufficiency of reforms have led to periodic revisions—in the 1968 Amendments, the 1976 Amendments, the Carl Perkins Act of 1983, and now in the 1990 Act.

In the recent changes, the focus on students with special needs is clear enough, since the Perkins Act directs federal funds to local districts and postsecondary institutions with high concentrations of such students. But the nature of program improvement remains murky. In my interpretation, program improvement is effectively defined in the Perkins Act (for the first time since 1963) as the integration of academic and vocational education, the development of tech-prep programs and other linkages between secondary and postsecondary programs, and the development of performance measures (a way of improving programs by specifying expected outputs rather than inputs). But all of the elements remain vague in the legislation, and, therefore, they are subject to various interpretations. There appears to be a great deal of confusion about how to respond to the Perkins Act, and already a battle of sorts appears to be shaping up between those who want to use federal funds for "business as usual" and the proponents of reform.[1]

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[1] For a preliminary report suggesting that states are not taking the need to change seriously, see "Problems in Implementing the Perkins Act—Preliminary Report Concerning State Plans," May 10, 1991, issued by a coalition of 31 organizations and summarized in *Education Daily*, May 15, 1991, p.5.

Unlike many pieces of legislation, Congress has taken steps in the Perkins Act to determine whether its version of reform—its interpretation of the Rorschach test—prevails over others. The National Assessment of Vocational Education, required by the Act, is the third in a series stretching back to 1978.[2] It represents the institutionalization of congressional effort to see whether its will has made any difference to state and local practice. The National Assessment's first obligation, then, is to see what has happened in response to the new Act. In this paper, written to support the National Assessment's efforts, I address the methodological issues that any such examination faces. I discuss the crucial effects of the legislation on 1) state administration and policy, 2) local educational practices, 3) the articulation between secondary and postsecondary programs, and 4) the labor market outcomes associated with vocational education. In each of these sections I outline the existing baseline information about current practice, present some appropriate methodological approaches, and outline the particular pitfalls researchers are likely to confront. The paper's fifth section describes some general considerations that affect all National Assessment research.

The National Assessment faces an inescapable ambiguity at the outset: What did Congress really intend in enacting the new Perkins Act? The direction of any research and the derivative methodological issues depend on what questions one wants to ask and where one wants to go. But in this case, the crucial questions are not at all obvious, because Congress has not been especially clear in its purposes. In the final section of this paper, I offer my interpretation of what the Perkins Act requires, arguing that there is only one real question of any importance and suggesting a direction for the National Assessment consistent with that interpretation. Where the first five sections are intended to be judicious, balanced, even pedestrian, the final section is intended to be argumentative, provocative, and possibly injudicious. But that is, after all, the point of a Rorschach test: The interpreter must come to his (or her) own conclusion about an ambiguous pattern, despite ambiguity about what it really means.

I. EFFECTS ON STATE ADMINISTRATION POLICY

The 1990 Perkins Act continues the earlier practice of requiring states to establish a state policy, contained in a state plan. In some ways, states have greater power than previously. For example, state-level committees of practitioners can decide what performance measures to require, and states can interpret, if they want to, the meaning of academic and vocational integration and the structure of tech-prep programs. But in other ways, state policy has been circumscribed. The funding formulas take most of the discretion away from states for sub-state allocation, and state departments of education are left with fewer resources for their own initiatives.

In determining the effects on state policy, a valuable source of baseline information is available from the National Center for Research in Vocational Education (NCRVE). The information was obtained through a survey of state policies in all 50 states in five different areas (secondary vocational education, postsecondary vocational education, Job Training Partnership Act programs, welfare-to-work programs, and state economic development activities), undertaken during 1990-91 at the RAND Corporation (McDonnell and Zellman, forthcoming). This survey provides information on pre-Amendment policies, based on telephone surveys to relevant state officials.

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[2] Alternatively, the current assessment is the sixth in a series including reports in 1938, 1963, and 1967; see Grubb (1978).

An obvious step is for the National Assessment to replicate this research, via telephone surveys to state officials responsible for secondary and postsecondary policies. Such a resurvey could pose many of the same questions asked in the RAND study, as a way of measuring changes. In addition, new questions could focus on the elements of reform that seem most important, including each state's interpretation of integration, tech-prep, and performance measures. Such a survey is almost surely a better way of obtaining information on state policies than reading state plans, since the latter are compliance documents providing little information about what states actually do. However, telephone questionnaires are not the ideal way to obtain clear information about state practices (as distinct from state policies). In the RAND study it has been extremely difficult to get clear information on certain state efforts, and practices (including difficulties and outright errors in implementing new legislation) are unlikely to show up in responses to questionnaires. It is therefore necessary to develop other sources of information about state responses. Therefore, all investigations of local practices and responses to the Perkins Act should incorporate questions about state practices, to gain a different perspective on how states have changed.

Among the special problems this investigation should consider are the following:

The effects of nonvocational state policies: In the past, state policies which have nothing specific to do with vocational education have had tremendous effects on vocational education. The most obvious example is the effect of increasing graduation requirements on vocational enrollments (Clune, White, and Patterson, 1989). State credentialing requirements, course approval procedures, and textbook requirements also can affect the ability of localities to modify their curricula, and have already affected local efforts to integrate academic and vocational education (Grubb et al., 1991; Bodilly et al., forthcoming). In addition, because several reforms embedded in the Perkins Act potentially affect academic as well as vocational education, it would be valuable to know if states modify their "academic" policies or provide funding from their general funds (as distinct from vocational funding) to enhance reforms contained in the Perkins Act.

Effects on secondary versus postsecondary state policies: The 1990 Perkins Act, like its predecessors, states that a single state agency shall receive federal funds. In the past, the majority of these agencies have been the state departments of education responsible principally for K-12 education. They have conveyed funds for postsecondary programs by interagency agreements to the state department responsible for community colleges, technical institutes, and area vocational schools. Therefore, a complete description of effects on state policies needs to query the state departments responsible for postsecondary programs.

A common complaint of postsecondary institutions is that they have little influence on state policy when the single state agency is a K-12 department. Since enrollments in secondary vocational education have been decreasing while postsecondary enrollments have been increasing, such an imbalance—if true—would be potentially detrimental to having federal funds promote reforms at the level where vocational education is increasingly important. Therefore, the National Assessment's analysis of state policies should investigate the claims of undue secondary influence on state policy, by questions at the state and local levels and by identifying ways in which state policies have been difficult for postsecondary institutions to follow.

Types of performance measures being adopted: The Perkins Act requires state committees of practitioners to adopt performance measures by August 1992. It will therefore be possible to determine what these measures are in late 1992. However, since the Perkins Act requires only that measures be developed (not implemented) and are silent about how such measures are to be used, the real effects of performance measures on data collected, state use of performance measures, and reforms undertaken in response to performance measures will not be clear until later, perhaps 1993 or (realistically) 1994 or 1995. As in many areas of its analysis, the National Assessment will need to ascertain what states plan to do. This will be as important as determining what states have done by the time the National Assessment reports to Congress in mid-1994.

II. EFFECTS ON LOCAL EDUCATIONAL PRACTICES

A second question which the National Assessment must address—indeed, the only question of any real interest, as I argue in the final section—is how the Perkins Act affects local practices in vocational education and, because the potential influence of the Act spills into the "academic" curriculum, in academic education as well. On the subject of classroom practices, four sources of baseline information can be cited:

1. A survey of states and local districts in the prior National Assessment (Milsap et al., 1989, reported in Muraskin, 1989, Ch. 1). This survey principally asked about the allocation of federal funds—including the use of various set-asides in the original Carl Perkins Act—and program improvement funds.

2. Data on secondary transcripts, available for the high school class of 1972 from the National Longitudinal Study of the Class of 1972 (NLS72); the class of 1982 from the sophomore cohort of the High School and Beyond (HS&B) survey; the class of 1987 from a National Assessment of Educational Progress (NAEP) transcript study; and the class of 1990 from another NAEP transcript study. Transcripts for postsecondary students are available from the NLS72, for the high school class of 1972, and for the senior cohort in the HS&B data.[3] Such transcript studies are important because they reveal the frequency and coherency of coursetaking in vocational education. Prior examinations have revealed that many high school vocational programs are incoherent (e.g., Hoachlander and Choy, 1986) and high dropout rates from postsecondary vocational programs (e.g., Grubb, 1989a, 1989b). However, the drawback to the currently available data sets is that none of them describe course taking patterns after the enactment of the Perkins legislation. Therefore, they can serve to indicate what practices have been, but they cannot indicate whether the requirement for "coherent sequences of courses" in Section 235 has had any influence.

3. Research sponsored by NCRVE on the integration of academic and vocational education describes practices in effect in secondary schools as of 1990 (e.g., Grubb et al., 1991; Bodilly et al., forthcoming), based on visits to numerous schools around the country. An earlier survey by Losh, Border, and Bishop (1988) presents information from state directors of vocational education about high school integration efforts in their states. In addition, a telephone survey sponsored by NCRVE of about 300 community colleges and technical institutes will indicate what efforts to integrate academic and vocational education are now being undertaken at the postsecondary level (Grubb and Kraskouskas, forthcoming). These studies provide some guidance about the dominant approaches to integration. In addition, NCRVE research can also identify which states and localities have begun

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[3] Postsecondary transcripts were also collected for the sophomore cohort of HS&B only for those students entering postsecondary education directly after high school, but this is a limited and essentially worthless sample.

steps toward integrating academic and vocational education, enabling the National Assessment studies to differentiate between schools that have already started reforms and those that will probably start in 1991, when the new Perkins Act takes effect.

4. A set of observations of vocational classes in samples of high schools and postsecondary institutions, undertaken by Weber et al. (1985).

Given these sources of prior information, one obvious research method to generate evidence about changes is to resurvey local programs about their spending patterns and practices, roughly following the questionnaire used in the previous NAVE study. This survey should concentrate on the kinds of information that can be compared with prior results and can be readily determined by questionnaire, such as information about formal policies.[4] Such a questionnaire is also appropriate for asking about state policies—in both vocational and nonvocational areas—that have affected local practices.

Further analysis of trends in patterns of vocational courses would be valuable, particularly at the secondary level. While such an analysis cannot reveal anything about the effects of the Perkins Act, it can indicate trends prior to the enactment of the Act.

The crucial issue at the local level is how practices have changed in response to the Perkins Act, particularly in response to the requirement that programs "integrate academic and vocational education...through coherent sequences of courses so that students achieve both academic and vocational competencies" (Section 235). From experience examining schools that claim to have integrated academic and vocational education (Grubb et al., 1991; Bodilly et al., forthcoming; Adelman, 1989), it is clear that information about curriculum content and teaching methods cannot be reliably obtained through telephone questionnaires of written descriptions of programs. The reasons for this include the fact that administrators may engage in wishful thinking about their programs, and many changes are simply too complex and incomplete to be quickly understood. Therefore, the research undertaken about local practices should concentrate on site visits to a sample of secondary schools and postsecondary institutions. The site visits should determine how practices have changed, how integration of academic and vocational education is defined, the implementation problems encountered, and the school's or institution's plans for the future. (For greater detail about local site visits, see Stasz and Grubb, 1991.) The case studies are also appropriate for ascertaining what state policies have encouraged or hampered changes.

In these local case studies, several obvious problems will arise. The first is that, while the possible conceptions of integration are relatively clear for secondary schools, the issues at the postsecondary level are not as clear. Research in progress by this author and Eileen Kraskouskas, sponsored by NCRVE, is currently surveying about 300 community colleges and technical institutes. The preliminary results indicate that the dominant form of integration consists of requiring vocational students to take general education classes. A few institutions are developing new curricula, such as vocational or technical mathematics and technical writing, and others are using Writing Across the

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[4] In the area of vocational education, questionnaires often prove to be unreliable ways of collecting such ostensibly "hard" information as data on enrollments, enrollment trends and patterns, post-school employment, and the like, partly because the lack of data forces guesses of unknown validity and because the lack of standard definitions make comparability across institutions suspect.

Curriculum and Reading Across the Curriculum to change the content of both vocational and academic courses. About one-fourth of those surveyed seem to be on the road to more ambitious reform, and are, for example, designing new interdisciplinary courses. However, there has been much less experimentation at the postsecondary level than in secondary schools, and we expect that the dominant responses to the Perkins Act will involve either general education requirements or efforts to provide remedial education for students in vocational programs. One implication is that the National Assessment's research at the postsecondary level should be more exploratory, and probably restricted in scope, compared to the site visits at the secondary level.

A second problem involves determining what has changed, particularly in schools where no direct information is available about practices prior to the 1990 Perkins Act. This is another case where site visits are clearly superior to questionnaire methods. In interviewing a series of teachers in a school over several days, and in observing classes, it is much more likely that researchers can get consistent answers about how practices have changed at the classroom level. Similarly, it will be crucial to determine the plans for subsequent change, since changes extending over several years will not be complete by the time the National Assessment study is due.

In examining local institutions, it is crucial to distinguish between local policies and patterns of funding on the one hand, and changes in educational practice within classrooms on the other. Compliance-oriented administrators often focus on the former, as do federal regulators and auditors; but the interesting issue at the local level is how classroom content and interactions change. This is yet another reason for site visits rather than questionnaire methods. The administrators who typically respond to questionnaires are likely to confound changes in funding with changes in practice, and only classroom observations and teacher interviews can disentangle the two.

Finally, there is one issue about local practices and requirements of the Perkins Act that is nearly intractable. The legislative language authorizing the National Assessment specifies that the assessment shall include "evaluations of...academic and employment outcomes of vocational education, including analyses of...the extent and success of integration of academic and vocational curricula" (Section 403). This suggests that outcome evaluations of integration efforts are necessary. However, evaluating the consequences of integration poses several technical problems.

Programs being implemented under the banner of integration vary widely in their purposes, scope, and stage of development. This makes it difficult to compare outcomes across programs, or to devise appropriate control or comparison groups. In addition, appropriate measures of outcomes are unclear, in part because schools have turned to integration for varied reasons, and in part because well-known tests of cognitive abilities are clearly inappropriate to curricula that integrate vocational with academic education. Finally, the timing problem is impossible to resolve. Very few programs will be far enough along to expect any substantial outcomes by the time Congress reconsiders the Carl Perkins Act. For all these reasons, formal evaluations of the effectiveness of integration efforts are not warranted, though it may still be possible to carry out evaluations in specific and restricted cases (outlined in Stasz and Grubb, 1991).

III. EFFECTS OF ARTICULATION BETWEEN SECONDARY AND POSTSECONDARY PROGRAMS

Interest in various forms of articulation between secondary and postsecondary programs—labeled variously as 2+2 programs, tech-prep, or simply articulation agreements—has been high throughout the last decade. As a result, there are several surveys of such programs in the late 1980s, including one by Long et al. (1986) and another by the National Commission on Occupational Education (1989) based on a limited sample of community colleges. In addition, ongoing research sponsored by NCRVE (Dornsife, forthcoming) will survey a large number of 2+2 and tech-prep programs to understand variations in the programs' accomplishments.

Under the Perkins Act, states (rather than the federal government) will allocate federal funds for tech-prep through an RFP mechanism. They therefore have the ability to establish their own policies about what constitutes tech-prep, how funds are to be spent, and whether other state and federal funds (including other Perkins allocations) are also used to support tech-prep. Therefore, an obvious research task is to survey states to determine their policies toward tech-prep and how Perkins funds earmarked for this innovation have been allocated. Such questions could be included in the survey of state policies mentioned in Section I above.

As in the case of curriculum integration, it is necessary to examine separately how local programs change in response to federal tech-prep funds. The practices included in various tech-prep programs vary enormously, and, unlike the case of curriculum integration, site visits do not necessarily help clarify all of them. Therefore, a questionnaire addressed to a subset of the tech-prep programs funded through the Perkins Act, with different segments addressed to the secondary and the postsecondary institutions involved, seems the most appropriate way to determine what practices are being federally supported.

From existing research on tech-prep programs (e.g., Long et al., 1986; Dornsife, forthcoming) it is clear that, just as there are many approaches to integrating academic and vocational education, there are also many different practices local institutions label "tech-prep." One of the most difficult issues will be to distinguish among the various approaches. In the simplest of these, postsecondary institutions simply provide information about their offerings to secondary schools in their region, hoping to attract more students. The most common practice is articulation (i.e., providing common course numbering systems for secondary and postsecondary courses taken in high school). This enables students to avoid repeating courses and enables them to complete postsecondary credentials faster, but otherwise leaves both secondary and postsecondary curricula unchanged.

A substantial difference occurs when secondary and postsecondary institutions collaborate to change the curriculum of one or both institutions. A high school might change its vocational curricula; for example, by adding more science and math, incorporating applied academics courses, or creating a cluster approach to better prepare students for a particular postsecondary program. Secondary and postsecondary institutions might create new programs with a logical progression of courses during high school and on through a community college or technical institute. (In some cases, tech-prep programs make changes in the high school curriculum that amount to integrating academic courses into vocational programs, effectively combining these two reforms.) When substantial curriculum modifications take place, tech-prep programs can enhance skill levels rather than simply accelerate the pace at which students complete programs (as with articulation agreements). In addition, this approach to tech-prep can be interpreted as a way of reforming high school vocational programs by making them broader, more rigorous, and better connected to postsecondary education, as well as to employment opportunities.

Finally, in order to help students make better choices about their occupational futures and schooling plans, some tech-prep programs have improved guidance and counseling.

Tech-prep programs that have become fully institutionalized usually incorporate several changes; that is, they are likely to have a sophisticated information and marketing campaign, modified curricula, and strengthened guidance and counseling at both the secondary and postsecondary levels. They also have established close working relations between secondary and postsecondary teachers and administrators. Such an approach is a far cry from a program that merely provides information to high school students or uses articulation of courses.

The first responsibility of a survey of local tech-prep programs is to distinguish the approach to tech-prep a particular program has taken. Of particular interest is the question of whether high school practices have changed in order to increase the competencies of high school vocational students. As with curriculum integration, there is a dynamic aspect to the question of what changes tech-prep programs have introduced. Because these reforms take several years, it is important to ask about planned changes in addition to those that have already taken place.

Finally, it would be valuable for the National Assessment's examination of tech-prep programs to be asking some harder questions about the programs' effects. Since most tech-prep programs are, or recently have been, in the stage of development, they have often been surrounded by the boosterism that is an inevitable (and probably desirable) component of innovation. But to date, there is almost no information about some simple dimensions of tech-prep programs, including the numbers of high school students enrolled, the numbers that make the transition to the postsecondary component, and the numbers that complete associate degrees. Information about the subsequent labor market experience of these students is completely missing. What little evidence there is suggests that rates of progress through tech-prep programs are quite low,[5] raising the question of how these forms of articulation between secondary and postsecondary institutions can be made more effective. While it will be difficult for the National Assessment to develop very sophisticated outcome evaluations of tech-prep programs, it should be possible for surveys of local programs to ask for some measures of performance, and for the National Assessment to explore more systematic evaluations of those few tech-prep programs that have been in operation for some time.

IV. EFFECTS OF VOCATIONAL EDUCATION ON LABOR MARKET OUTCOMES

In a way, vocational education appears to be one of the few educational programs that should be simple to evaluate. Since one goal is almost by definition to prepare students for vocations, examining the labor market outcomes of vocational students (compared to similar students in nonvocational programs) should provide crucial evidence about the effectiveness of vocational programs. (Of course, as programs at the high school level shift to broader conceptions of vocational education, the validity of measuring success by employment alone becomes suspect.) Therefore, a large literature has developed examining the effects of vocational education on employment, unemployment, wages, and earnings. This literature is currently being reviewed by Charles Benson (forthcoming) and probably does not need yet another review. The only question is whether the National Assessment can sponsor additional analyses to address questions that have not yet been clearly addressed.

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[5] Some of the only numbers on students' progress—from a tech-prep program at the Community College of Rhode Island—suggest that perhaps one quarter of seniors in a tech-prep program continued to the community college (Dornsife, forthcoming). However, these are rough estimates since the longitudinal data necessary to follow individuals through the different stages of tech-prep has not (to my knowledge) ever been collected.

The previous investigations of labor market effects have been limited by the data sets available. Each of these (e.g., the National Longitudinal Survey of the Class of 1972, High School and Beyond, and the National Longitudinal Survey of Youth) has been analyzed for the most obvious effects of vocational education.[6] While each data set has some substantial drawbacks, it is inconceivable for the National Assessment to invest in new data collection that could remedy these shortcomings (with one possible exception mentioned below). However, there are several issues which have been addressed in relatively few studies, which, in my view, the National Assessment could pursue to some advantage:

1. Two studies, one at the secondary level (Rumberger and Daymont, 1984) and one at the postsecondary level (Grubb, 1991), indicate that economic returns to vocational education are much higher for those who find related employment and zero for those in unrelated employment (as one would expect if vocational education prepares individuals for a narrow range of occupations). However, the issues of how to measure "relatedness" and of how different conceptions of "relatedness" affect estimates of the proportion of vocational students finding related employment and the returns to vocational education have not been adequately addressed. This issue is especially important as states begin to develop performance measures, where one obvious measure of performance (already used by Florida to close programs) is the proportion of completers who find related employment. The National Assessment could, therefore, invest in research using currently available data sets to examine the effects of alternative conceptions of "relatedness."

2. To date, there has been little research on the dynamic effects of vocational education; that is, its effects over time as individuals move among jobs. One set of results (Meyer, 1981) indicates that the effects of high school vocational programs decay over time. Other results at the postsecondary level (Grubb, 1991) indicate that postsecondary certificates and associate degrees generally increase earnings, but do so by increasing access to those positions where individuals accumulate more experience and are more likely to receive on-the-job training. This implies that the benefits of postsecondary programs materialize only over time. The National Assessment could sponsor research using available data sets to analyze dynamic patterns more carefully.

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[6] One data set has not yet been examined, to my knowledge. The Survey of Income and Program Participation (SIPP) may be useful for examining the labor effects of postsecondary vocational education. The SIPP data asked individuals about their receipt of postsecondary vocational certificates and associate degrees, and also asked individuals whether they used their education on their current jobs. While the control variables in SIPP are relatively meager, these data could still shed some light on the effects of postsecondary programs and on the effects of education related and unrelated to current employment.

Analysis of dynamic patterns obviously requires longitudinal data, but relatively little exist that are appropriate to examining the effects of education on labor market performance.[7] One possible way to gain additional information about dynamic patterns would be for the National Assessment to support a limited survey of individuals, asking them retrospectively about their employment and education histories, their reasons for transitions, and the relatedness of their education and employment. This would be the only way to develop information on the current labor market experiences of individuals, and the only way within a short period of time to develop new information about dynamic patterns in labor markets.

3. Most analyses of vocational education have concentrated on the effects of secondary programs; analyses of postsecondary programs have been much less common. This imbalance is understandable in the context of the 1960s, when secondary programs dominated. However, as enrollments in high school programs have dwindled, as secondary programs have turned to broader conceptions of vocational education less concerned with specific skill preparation, and as postsecondary vocational programs have expanded, it is clear that more research on postsecondary programs needs to take place. The National Assessment should, therefore, investigate further analyses of postsecondary vocational education, perhaps using data sets that have not been examined (see footnote on SIPP data.)

There is one additional source of information now being developed that merits further analysis. Unemployment Insurance (UI) data provides several potential advantages for analysis: 1) It requires no expense for collection and does not suffer from the nonresponse problems associated with conventional surveys; 2) it is longitudinal; and 3) it is an accurate record of wages and earnings (though not other forms of income). Several states have examined the possibility of using UI data to examine educational outcomes (Baj, Trott, and Stevenson, 1990). Since these early efforts seem promising, the National Assessment could invest in further development of the methods necessary to analyze UI records to examine the effects of vocational programs, both to provide information about the labor market effects of vocational education and to provide guidance to states as they develop performance measures.

V. GENERAL CONSIDERATIONS IN NATIONAL ASSESSMENT RESEARCH

In designing a program of research, some issues cut across individual pieces of research. It is important to keep these in mind during initial planning in order to reap the benefits of interactions among projects, since once research is designed and begun, it is usually too late to incorporate questions and issues that may affect other projects.

One obvious consideration is development of corroborating information across separate studies. For example, information about state policies can be gathered not only through questionnaires to state officials but also in questionnaires to local programs and in local site visits. Information about changes in practice can emerge from examining changes in financing patterns, formal policy, and classroom practices. Information about efforts to integrate academic and vocational education may provide evidence about tech-prep programs, and vice versa, since the most thorough approaches to integration usually establish substantial articulation with postsecondary institutions, and the most sophisticated tech-prep programs shape high school curricula in ways that look like forms of integration. The National Assessment should plan its research to maximize the possibility of corroboration across specific projects.

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[7] Probably the best longitudinal data for these purposes is the NLS72 data, with 14 years of information on employment and postsecondary education for a sub-sample of individuals. The HS&B has only 6 years of data and the NLS data have relatively crude measures of education. None of these describe the experiences of students recently in school.

One research tactic that has proved valuable within NCRVE is use of the local community as the unit of analysis; that is, investigating all related programs within a community rather than examining a variety of programs in different communities. One advantage of choosing communities is that programs within a community face similar labor markets, fiscal conditions, political configurations, and demographic patterns, reducing the variation in possible influences. In addition, the institutions within communities almost always interact with each other, even in communities where coordination seems relatively absent,[8] and information about these interactions helps clarify the transitions among institutions, the patterns of cooperation versus competition, and the processes of reform. One implication of this approach is that the National Assessment could examine both secondary and postsecondary institutions within a sample of communities, rather than choosing secondary and postsecondary programs from different communities, and could use these institutions to address a variety of congressionally mandated concerns.

A third general consideration is the timing problem. Initial implementation of the Perkins Act will take place in 1991-92, but may, in practice, be delayed because the federal regulations accompanying the legislation had not been completed as of May 1991. With a report due to Congress in mid-1994, the National Assessment will be able to collect information about responses to the Perkins Act only through the beginning of the 1993-94 school year, the third year under the new Act. Given that many reforms instituted by the Act require difficult and subtle changes—particularly the changes in teaching implied by the integration of academic and vocational education, the novel linkages among institutions in tech-prep programs, and the transition to outcome-based policy implied in performance measures—it is unreasonable to expect that much will have changed by late 1993. It is crucial, therefore, to look for evidence of change-in-progress as much as reforms already in place and to avoid creating unreasonable expectations about what federal legislation can accomplish in a short period of time.

A final consideration affecting all of the National Assessment's research is quite different from the others. The initial implementation of the Perkins Act coincides with a national fiscal "crisis" precipitated by the 1990-91 recession, in which the majority of states have discovered deficits and are seeking to cut their spending. Because of the magnitude of educational spending, the cuts will be at the expense of schools and colleges. Also, an alarming number of local districts are at the verge of bankruptcy. Indeed, the fiscal problems appear to be most severe in central cities, which are precisely the districts where Perkins funds will be directed under the new funding formulas of the Perkins Act. Reforms are difficult enough in periods of tranquility and prosperity, but in periods of fiscal pressure they may be nearly impossible because of more basic concerns about survival, among both administrators and teachers. In addition, schools desperate for revenues may welcome federal resources, not for the reforms they can finance, but for the funding they can provide to compensate for lost state revenues.

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[8] For an analysis of the relations among various education and job training programs in specific communities, see Grubb and McDonnell, 1991; for a similar analysis of the remedial education programs linked to vocational education and job training, see Grubb et al., forthcoming.

One possibility National Assessment research must examine is that reform efforts will be swamped by the fiscal crises some states and localities experience. It would be inappropriate to blame federal legislation for failure to reform vocational education if the next few years are a period of fiscal crisis and fights for survival. Should this prove to be the case, it will be necessary to confront the limitations of existing federal policy in K-14 education (now concentrated on marginal improvements to existing programs, particularly on behalf of low-income or "special needs" students) when the state and local funding base for education has become so vulnerable to fiscal cycles.

VI. WHAT DIRECTION FOR FEDERAL POLICY? OR WHERE DO "WE" WANT TO GO?

In the strictest sense, the National Assessment can comply with its mandate in the Perkins Act by documenting what happens in response to these changes in federal legislation. In a larger sense, however, the research the National Assessment undertakes—indeed, all research, whether policy oriented or not—should be driven by some sense of the basic problems at hand and the direction Congress wants to take with vocational education legislation. But therein lies the problem: As long as federal policy is the creation of consensus among groups with different interests and different perceptions of the problems, there is no simple interpretation of the direction Congress might have intended to take. However, the past 30 years of federal policy in this area provide some basis for interpretation.

As noted in the introduction, the twin goals of federal vocational policy since 1963 have been directing federal funding to students with greater needs; that is, low-income and minority students, the handicapped, women seeking nontraditional occupations, and others now described as "special needs" students, and program improvement. Each goal has been subject to different ambiguities. In the case of program improvement, prior to 1990, Congress had never defined improvement. Therefore, local institutions had been free to define it for themselves and, in practice, had used federal funds to buy equipment and start new programs. These are forms of improvement that might be termed relatively routine; that is, they ought to happen with state and local funds as conditions change. Congress evidently felt it was not getting much for its money. It therefore defined program improvement in the 1990 Act as the integration of academic and vocational education and other broader conceptions of vocational education. But rather than creating clarity, this may only continue to make program improvement murky. "Integration" is not defined in the legislation, it is unlikely to be further defined in regulations, and there is no indication that Congress had any idea what integration entails when it wrote the legislation. Indeed, while Congress does seem to have substantial change in mind, the overwhelming bulk of the Act's provisions cover administrative requirements, bureaucratic process, and the other minutiae of operating programs. It is all too easy to approach the Perkins Act as an administrative problem rather than a spur to change the direction of vocational education.

There has been a different but equally consistent dilemma about federal requirements for special needs groups. It has never been clear why federal resources should be concentrated on these students in the absence of information that vocational education is beneficial to them. Indeed, since the preponderance of evidence about the labor market effects of vocational education has been negative, or at best neutral, one could read the persistent effort to focus resources on "special-needs" students as a nefarious attempt to get more lower-class and minority students into a "dumping ground" or "warehouse," away from the middle-class kids in the academic track and away from the college-bound curriculum that might do them the most good. Similarly, in the Perkins Act, the persistent requirements about special-needs students and the funding mechanisms that allocate resources to those districts and institutions with the highest concentrations of special-needs students may be premature. In the absence of evidence that federal funds are being used to improve vocational programs and make them broader and better integrated with academic competencies, it makes no sense to direct special needs students into them. The appropriate goal, assuming that Congress wants its vocational education policy to concentrate on low-income and other special-needs students (as almost all of federal education policy does), is that special-needs students should have greater access to the broader and more integrated forms of vocational education promoted by the Act.

From these considerations, I conclude that the one issue of central importance, to which all others should be subordinated, is whether federal policy can change local educational practice in vocational education to move toward programs integrated with academic education, "coherent sequences of courses," content relevant to "all aspects of the industry," and generally broader goals. Until we can answer this question, other goals and issues, including the focus on special needs students, the desire not to supplant local funds, the governance provisions, and the many bureaucratic requirements that dominate the written form of the Perkins Act, are relatively unimportant.

This central issue holds at least four implications for the National Assessment's research:

1. All pieces of research should be connected to local changes. The effects of the Perkins Act on state policies, funding patterns, or access by special needs students (i.e., investigations of whether the use of funds meets the letter of the law) are irrelevant unless they can be related to changes in local practices. This means that each research task should not only examine what changes take place, but also should clarify whether, and how, such changes have affected local practices.

2. School-level observations should be the core of the National Assessment's research because only with this method will it be possible to describe changing practices in vocational and academic education in response to the Act.

3. If the purpose of federal policy is improvement in local educational practice, what forms might federal policy take other than the form it has always taken in vocational education (i.e., providing marginal amounts of money to a large number of districts and postsecondary institutions with (often vague) requirements attached)? Are there other forms that might be more effective (e.g., focusing on teacher preparation, funding more experiments or rigorously evaluated demonstration projects),[9] or supporting a small number of innovative schools? The National Assessment should keep in mind from the outset the need to examine alternative forms of federal policy once its research is completed.

4. One research task necessary to address the previous question would examine what federal (or state) policies have been most effective in promoting changes in educational practice.

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[9] One curiosity is that there has always been considerably more funding for rigorous evaluations of experiments and demonstration projects in the areas of job training and welfare-related training programs than there has been in vocational education.

However, conventionally, this issue is analyzed by looking at a specific program to determine its influence. Often results show that its influence has been marginal (e.g., McLaughlin, 1989). However, the question could also be answered by reversing the research procedure. Examples of changed practice can be analyzed to determine the causes of the change. There are several clear examples of change which could be examined from this perspective, such as the growing popularity of cooperative learning and the adoption of mastery learning and competency-based instruction (including competency-based instruction in vocational education). The results might be more instructive for formulative federal policy than once again documenting the fact that a specific federal program has failed to make much difference because of implementation problems.

The issue of whether and how federal policy can improve classroom practices extends beyond vocational education. The National Assessment might make common cause with the "academic" side of the Department of Education in sponsoring research along these lines. The results would be valuable to everyone, because without better ideas about how content and teaching within classrooms can be changed, we are likely to find that federal funding for program improvement in vocational education once again has failed to influence practice.

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Effects of the 1990 Perkins Act on State Administration and Policy

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INTRODUCTION

This paper discusses the effects of the 1990 Perkins Act on state administration and policies from the perspective of a state practitioner. Most of the content is based on observations and experience rather than research. Included are discussions about the role of the state in both administration and leadership and how some of the changes in the 1990 Act affect those roles. This discussion should assist researchers in identifying issues to be considered in the development of the study.

The changes in the Perkins Act have major implications for state administration of vocational education, both in policy and practice. Some implications are obvious because of the fiscal impact created by the reduction in funding available for state administration and state discretionary activities. Other implications will vary according to the governance and delivery of vocational education in each state.

In approaching this subject, it is important to keep several factors in mind. The variance in state governance structures, the variety of delivery systems operating among the states, the size of the state, and the state resources available make an analysis of impact and effect very complex. For example, one midwestern state administers vocational education through a separate agency with a large staff and adequate funding. The fiscal effects of the Perkins Act on state administration will be minimal in that state, but some of the functions performed by the state staff will change. In another midwestern state, state staff salaries are totally dependent upon federal funding, with the state matching funds, and Title II-B funding is used for technical assistance from the state office. In this state, the changes in the Perkins Act will dramatically affect the number of staff and resources available and the functions performed.

As this study is developed, it will also be important to distinguish between the effects of the Perkins Act on state administration and the effectiveness of state administration in implementing the Act. Both areas are important, and information should be available about them.

EFFECTIVENESS OF STATE ADMINISTRATION IN IMPLEMENTING PERKINS

To study the effectiveness of state administration in implementing the Perkins Act, information can be gathered directly from states and from work completed recently by at least two other agencies. During 1987-88, RAND/NCRVE (National Center for Research in Vocational Education) surveyed secondary and postsecondary policies in all 50 states. Staff members of the Office of Vocational and Adult Education, U.S. Department of Education, conducted site visits to each state during 1989-91 to gather information about the way states define accountability and manage their accountability systems, and the impact on program quality. This review focuses on nine specific questions to be answered by the state and at the local level, including perceptions from selected employers of vocational program graduates. These questions are:

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1. How does the state define accountability?
   Program quality?
   Program impact?
   Program improvement?

2. What is the state's process for determining program accountability?
   What sort of indicators are used to determine
   - Program quality?
   - Program impact?
   - Program improvement?

3. How often is the accountability process used? How often and in what manner is the accountability process re-evaluated for its continued effectiveness?

4. What is the role of state staff in using the accountability process?

5. In what way, if at all, is the State Council for Vocational Education involved in the accountability process?

6. To what extent, if at all, are outside public agencies, employers, private concerns, and individuals involved in the accountability process?

7. How well does the accountability system measure program impact (i.e., the effectiveness of programs in meeting their stated objectives)?

8. How does the system provide for followup on programs needing improvement to determine if, in fact, improvement in quality and impact has taken place?

9. How does program improvement relate to program accountability?

The answers to these questions and the data available from the RAND/NCRVE study should provide a baseline from which to develop a comparison for practices and impact of the new Perkins Act on state administration.

EFFECTS OF PERKINS ON STATE ADMINISTRATION

State Role

During the reauthorization process, the role of the state received a great deal of discussion and study. The most obvious role of the state is to manage implementation of the legislation and carry out regulatory responsibilities. But beyond those functions, states conduct activities to assist with local program improvement and leadership development through a variety of methods. Although the August 2, 1990, Conference Report contains very little discussion about the state role, the Senate Bill (S. 1109) Report provides some clarity about the role of states and expectations for states in implementing the Perkins Act:

> ". . . the Committee recognizes that there is a significant role for the states to play in carrying out programs in two important areas: curriculum development and teacher training." (p. 15)
>
> "The Committee recognizes that effective administration of vocational education programs can only be accomplished with fiscal support, but it is the Committee's clear intent that the primary use of the federal dollar should be that of direct services.
>
> "Because S. 1109 changes the Perkins Act and places *new responsibilities at the local level, the role of the state is similarly redesigned* [emphasis added]. By driving money to the local level, S. 1109 frees up the state to monitor and evaluate programs, set goals and priorities, emphasize program improvement and excellence, and provide the kind of state leadership that will encourage programs to administer the economic needs of the state.
>
> ". . . in complying with S. 1109, the states are to spend the majority of their allocated funds on programs that benefit local providers." (p. 16)

The 1984 Perkins Act enabled Title II-B funding to be used for technical assistance. Much of this technical assistance was conducted through the state office, either directly or through contract with an educational institution, typically a university. A number of individuals and groups representing local educational interests expressed the concern that to a greater extent than the law intended, program improvement dollars meant for local use were being used by the states for statewide activities. As there authorization process unfolded, it became clear that steps would be taken to ensure that a greater portion of federal funds would be directed into local programs for improvement at the discretion of the local administration. As a result, states have eliminated some of the statewide activities which include a variety of services provided for the local level. The National Assessment could identify which statewide activities and services were eliminated and evaluate the effect on the quality of programs at the local level.

In addition to directing funding to the local level via formulas, the new Act reduces the remainder of the funding available to states for statewide activities and limits the use of funds to items prescribed in the law: [Sec. 201(b) and (c)].

> "(b) REQUIRED USES OF FUNDS.--The programs and activities described in subsection (a) shall include--
>
> (1) professional development activities for vocational teachers and academic teachers working with vocational education students, including corrections educators and counselors, and educators and counselors in community-based organizations, including inservice and preservice training of teachers in state-of-the-art programs and techniques, including integration of vocational and academic curricula, with particular emphasis on inservice and preservice training of minority teachers;
>
> (2) development, dissemination, and field testing of curricula, especially--

(A) curricula that integrate vocational and academic methodologies; and
(B) curricula that provide a coherent sequence of courses through which academic and occupational skills may be measured; and
(3) assessment of programs conducted with assistance under this Act, including the development of--
(A) performance standards and measures for such programs; and
(B) program improvement and accountability with respect to such programs.
"(c) AUTHORIZED ACTIVITIES.--The programs and activities described in subsection (a) may include--
(1) the promotion of partnerships among business, education (including educational agencies), industry, labor, community-based organizations, or governmental agencies;
(2) the support for tech-prep education as described in section 344;
(3) the support of vocational student organizations, especially with respect to efforts to increase minority participation in such organizations;
(4) leadership and instructional programs in technology education; and
(5) data collection."

The reduction in funds available for state-administered activities and state administration, coupled with the changes mandated for program structure, content, and emphasis, will cause states to examine and probably redefine the role of the state staff. This will probably result in new job descriptions and responsibilities for some staff. If the changes in the Perkins Act are to be implemented effectively at the program level, major statewide staff development and curriculum redesigning must occur in such areas as integration of academics and vocational education, appropriate services for special populations, competency-based vocational education, and teaching "all aspects of the industry." To what degree is this occurring? What new trends have emerged? Have functions of the state staff shifted from specialization to generalization?

The underlying questions in the 1990 Perkins Act are: What is the expectation for state administration? Is it only to facilitate funding flow-through? Is a leadership role expected? It is important for the state role to be as clearly defined as possible as a part of the state plan. Assessing impact and effectiveness of states in the delivery of vocational education will be difficult to measure without a clearly defined role.

As states have begun the process of developing state plans, the fiscal and administrative impact of the changes in the Perkins Act has been realized. The following situations are occurring:

- The responsibilities of many staff members are being redefined. This is a result of the legislation's changes in the processes carried out by the states. For example, the vocational evaluations which traditionally are were conducted by the state staff are now conducted at the local level. The state's role will be providing technical assistance rather than administering the evaluation process.

- The legislation requires employment of certain staff during a time when state budgets and federal funds for state administration are reduced. These mandated positions may mean that some functions are eliminated or other staff are reduced. One state has already indicated that it may decline the Title III-B funds for consumer-homemaking because it cannot meet the staff requirement.

- Many states are experiencing budget problems and are unlikely to be able to assist state and local programs by replacing Perkins funds redirected via the formula. States that previously relied heavily on the use of Title II-B funds for the cost of staff to conduct technical assistance may have difficulty finding another source to replace those dollars.

- The size of the state staff and amount of resources available varies tremendously all over the nation. Yet the requirements and functions which must be carried out to meet the mandates in the legislation and to provide leadership remain the same for all states. For example, it takes exactly the same amount of state staff time and effort to develop a state plan whether the state staff numbers 400, 40, or 4. Therefore, the quality and degree to which new mandates are implemented may be affected by the state's size.

- Some states are reducing the number of staff because of the loss in funds available for state administration (reduced from 7 percent to 5 percent) and the limitations on funds available for other staff use.

The National Assessment could identify the situations occurring in states which may affect state administration but are not a direct result of changes in the Perkins Act. This clarification could help distinguish the impact of the Act from other coincidental factors.

The variety of approaches used by the states to develop state plans should also be considered in the study. For example, Section 113 of the Perkins Act requires that the state plan be developed on the basis of the results of a needs assessment, to be conducted on a very short timeline. Theoretically, the results of that needs assessment should identify priorities for the use of funds, technical assistance, staff development, and curriculum development, particularly for the new items contained in the Act. It should provide the benchmark against which progress can be measured. **Some questions for research are: How did states approach the conduct of the needs assessment? To what extent does the state plan reflect the needs identified? How does the state respond to results that may indicate a need to review and make changes in the entire delivery system for vocational education? How does the state establish priorities for state-administered activities?**

The previous NAVE (National Assessment of Vocational Education) study devoted most of the discussion about state administration to the methods states used to distribute funding. Very little, if any, of the study focused on the actual impact of state administration on the quality of local programs. This appears to be the primary question for the new National Assessment.

State Expectations and Local Control

The law places increased emphasis on accountability and monitoring by the state. At the same time, it changes the role of the state in evaluating local programs. The new state-developed systems of performance standards and measures place emphasis on "outcomes," but the evaluation process is managed at the local level. Ideally, these changes should result in improved outcomes for students because the evaluation of the instructional process is managed closer to the classroom level.

This change, while not entirely new, certainly is a new way of "doing business" for many states. Most states have some type of program standards that measure program "inputs," but fewer have fully developed performance standards which will measure the outcomes of vocational education instruction. It would be useful to assess the states' efforts in this area, using questions such as:

- Will the shift from state control to local control of the evaluation process have an impact on results for students?

- Will there be enough uniformity of results in a locally controlled system to draw conclusions about the effectiveness of vocational education programs?

POLITICS IN EDUCATION

The new requirements in the 1990 Perkins Act place vocational education in the position of pioneering some major components of educational restructuring, including outcomes-based education; state-established performance goals with processes managed locally; and, through requirements for integrating vocational and academic education, improvement of academic skills.

Politics in education has the potential to make implementation of these changes very challenging. Because vocational education has held second-class status within the educational system for many years, it may be difficult for it to gain acceptance as a legitimate vehicle for teaching academic skills. To be successful, strong linkages must be immediately established between vocational education and the traditional academic education community. One small segment of education alone cannot effectively make the required changes such as integrating academics and vocational education. Turf protection and technical obstacles such as teacher licensure will need to be overcome. Many of these changes must start in the state office. In terms of the staff and credentials, state education agencies are often organized like a local school district. Therefore, for vocational education to take responsibility for components in educational restructuring, the vocational education unit in state government will need to have strong linkage with the rest of the education staff. **The assessment might ask: What are the political and technical obstacles states identify and remove to accomplish the instructional mandates in the Perkins Act? (Some obvious examples would be acceptance by and cooperation from the academic community, and issues related to teacher licensure.)**

DELIVERY SYSTEM

The previous NAVE study, *Final Report, Volume II*, discusses differences in the way states allocate funds under the Perkins Act. It found some variations and also drew several conclusions about state practices in allocating funds:

- Nationally, almost 40 percent of funds were spent for postsecondary education.

- Separate area vocational school districts appear to have received a disappropriate share of the federal funds that flowed to secondary education.

- On a per-pupil basis, area vocational school districts and postsecondary institutions received much larger grants than school districts.

- If only school districts are considered, there is some evidence of targeting funds to districts with higher proportions of minority populations. If Pell Grants are used as a measure of need, there is no evidence of comparable targeting at the postsecondary level.

- In at least half of the states visited by the NAVE study team, the state office administering the Act was able to limit the grant eligibility of institutions not under its purview. For example, in a state where vocational education is administered by a postsecondary board, the participation by secondary districts may have been limited.

- Most states had a predetermined portion of funds available for secondary and postsecondary education (or for particular institutions).

- The unequal distribution of resources across sectors and institutions meant that intended beneficiaries in a given sector or set of institutions were considerably more likely to receive support in some states than in others.

- Most school districts received awards that were too small to enable them to mount new initiatives of any size.

All states have K-12 districts and postsecondary institutions that are involved in providing vocational education to some extent, but many also have a system of area vocational schools which have been the focal point in the vocational education delivery system. Changes in the methods for distributing funds will probably have the most impact on those area vocational schools. This shifting of funds among eligible recipients may be dramatic enough to cause a re-examination of the delivery system.

Both the methods of allocating funds and the funding formulas will affect the overall delivery system for vocational education in most states. The high schools, which traditionally have not been recipients of large amounts of federal vocational education funds, will probably receive larger allocations than in the past. Districts may opt to keep the funding rather than allocate their share to an area vocational school. Some states where the area vocational schools have been the chosen delivery system will be the most affected by this change in allocation practices.

A question for assessment is: As a result of new funding approaches, what changes, if any, will occur in the delivery of vocational education?

SPECIAL POPULATIONS

The 1990 Perkins Act places increased emphasis on serving special populations and requires that they be served in high-quality vocational education programs. This change affects state administration because states will need to provide strong leadership, conduct staff development, develop resource materials, and monitor the actual participation of special populations in vocational education.

Because of the structure and funding requirements of the previous Perkins Act, the emphasis on special populations resulted in a focus on fiscal and accounting processes rather than on providing services. The majority of effort and time was spent on formulas, computing excess costs, and documenting numbers served. The best practices for helping special populations have access to and success in participating in vocational education received much less attention.

The NAVE study, *Final Report, Volume I*, states that "Little additional direction has been forthcoming from federal or state levels on the targeting of federal funds for supplementary services to disadvantaged and handicapped students, nor has technical assistance been provided on effective practices for serving these populations." **Some questions for assessment are: What staff development activities does the state conduct to assist local programs in providing appropriate accommodations for members of special populations? What resource materials has the state developed for use at the local level that identify effective strategies and methods for instructing members of special populations? How does the state provide leadership to assist local programs in serving members of special populations in high-quality vocational education programs? How does the state monitor the following elements for members of special populations in vocational education: access, actual participation, assessment of need, support services, and job placement/transition?**

States should be a critical link to successful vocational education at the local level. For the goals and mandates of the 1990 Perkins Act to be effectively implemented, states must play a strong role in assisting local programs with appropriate methods for serving special populations and implementing the other changes in the legislation.

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A New Vision for Vocational Education: Assessing Implementation of the 1990 Perkins Act

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INTRODUCTION

The 1990 Perkins Act offers vocational educators unique challenges and opportunities to reshape their practices in ways that will deepen the educational experiences of students and bring vocational education into the 21st century. The principal issues for the National Assessment of Vocational Education at the local level concern whether or not local players are seriously striving to implement key features of the Perkins Act (i.e., integration of vocational and academic education and "all aspects of the industry" instruction). "Integration" and "all aspects" represent a radical departure from past practice in vocational education. These new practices are not easily understood and may be difficult, complex, and time-consuming to implement. Oddly, most vocational practitioners claim that they are already doing these things.

Assessing these new practices and measuring degrees of implementation will be difficult. This paper will examine the dimensions which signal that schools are integrating vocational and academic instruction. It is critical that the National Assessment develop instruments that distinguish practitioners who are actually integrating academic and vocational education from those who are using the same terminology to describe practices that are not true integration. For example, the assessment should be capable of distinguishing between poles, where one program's integration stops at students occasionally using math to measure raw materials and another program's academic and vocational teachers have engaged in sustained, long-term planning and students' entire vocational and academic curriculum has been fully integrated and structured around learning about and operating within an industry. Thus, it would be important to know if integration of academic and vocational instruction appears in a program's objectives but is not afforded teacher planning time and does not appear in course materials.

INTEGRATION OF VOCATIONAL AND ACADEMIC LEARNING

In the 1989 hearings on the reauthorization of the Perkins Act, virtually every commentator noted the need to bring together these two parts of our educational system. The Act clearly requires integration in its sections on state assessments, state plans, local plans, local evaluations, and elsewhere. The challenge for local implementers is to translate this rhetoric into day-to-day reality in schools.

Section 239(c)(1)(B) requires that basic grant funds be used in programs that "integrate academic and vocational education in such programs through coherent sequences of courses so that students achieve both academic and occupational competencies." The breadth of the meaning of "integration" is emphasized in both the House and Senate Reports. For example, the Senate Report states:

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> "[T]he local recipients are to use Perkins funds to support programs which integrate academic and vocational training. Such integrative activities are intended to support a sequential course of study which uses an applied context to teach both broad and specific job training and which at the same time reinforces academic skills." (p. 20)
>
> "The Committee notes that such integration must be supported by a two-pronged approach: it must include the development of the curricula, and it must include the teacher training required to make effective use of that curricula." (p. 10)

Similarly, the House Report emphasizes "academic curriculum...directly connected with real life applications," including "more advanced skills of thinking, problem-solving and comprehension" (p. 6). It notes that important elements for integrating academic and vocational coursework include: "curriculum development and professional development," ensuring that "both vocational and academic instructors [are] involved from the start in the integration of the curricula," and the need for strong leadership "to break down the significant barriers that often exist between vocational and academic programs."

Under the Act, in assessing "integration of academic and vocational education," it would not be adequate to look at students' transcripts or schedules and determine that integration is taking place because math, English, social studies, science, and vocational courses are listed. Rather, the inquiry must determine the extent to which curricula are synthesized and the level of development and use of basic and advanced academic skills in the vocational setting. There is no single, prescribed way to do these things, but a comprehensive approach is involved, with courses aligned, sequenced, and mutually reinforcing (both across students' current schedules and over time), and with academic and vocational staff working together. The degree of integration in the program must be assessed, not whether the student takes separate, unintegrated programs which may or may not become integrated in the student's mind.

One barrier to integration is the nearly total separation between academic and vocational education in today's schools. In the Perkins Act, Congress seeks to deter the tracking that relegates some students to "work with their hands," with minimal and diluted academic content in their courses, as schools fulfill their own prophecy of these students' limited potential. The subtext of vocational education has been its function of sorting by social class: Vocational education is for the "non-college bound," (i.e., working-class) student. Pursuing integration with academic education requires us to take a different view which sees vocational education as an alternative way to learn the same academic concepts and skills (including research, analytic, and philosophical thinking skills) that other students must learn. This is a new expression of an old truth. Vocational teachers have always seen students demonstrate competence, thinking ability, and creativity in a vocational setting, although some students are unable to demonstrate those skills in an academic setting or on a standardized test.

Vocational students demonstrate mastery through exhibition. Academic educators are now pursuing similar approaches which allow students to show individually configured excellence. As academic and vocational education integrate, academic education must go even further in embracing vocational methodologies, while vocational education must include much greater academic content.

"ALL ASPECTS OF THE INDUSTRY" INSTRUCTION

The new Perkins Act provides a platform upon which to integrate academic and vocational education—"all aspects of the industry" instruction. "All aspects" reflects a movement away from occupationally specific, narrow, skill-based training. The term "industry" should be interpreted broadly. In the legislative history, Congress expresses strong concern about overly narrow skill training. Also, the list of factors in the Act (planning, management, finance, underlying principles of technology, technical and production skills, labor, community, and health and environmental issues as they pertain to an industry) indicates that using the term "industry" instead of "occupation" is intended to broaden, not narrow, the focus of the training. Thus, the term is not intended to be limited to the highly specific definitions in the Standard Industrial Classification. Rather, it should be read broadly to cover such examples as the automotive or transportation industry, the construction or housing industry, the telecommunications industry, etc. Within this broad framework, local schools can use considerable discretion in how to name or define the "industry."

This broad view is important for ensuring that the purposes of the Act are met. Focusing on "all aspects of the industry" ensures that the areas of planning, management, etc., are not defined away by a view that says they are not needed for the particular job or occupation for which the student is training. Congress was very concerned about developing a broad range of occupational and academic skills and not locking students into overly narrow skill training for one predefined job slot.

Neither integration with academics nor "all aspects of the industry" instruction can be accomplished without the other. They are two ways of looking at the same educational goals. Integration means merging the head and the hand. "All aspects" means essentially the same thing; that is, broadening our currently narrow, occupationally specific definitions to encompass the skills (often conceptual and critical) required to understand management, planning, history, and the social aspects of broad industries.

ELEMENTS OF INTEGRATION

To fulfill the Act's promise, the people closest to the students at the local program level should have the strongest sense of the Act's goals, what the local evaluation is looking for, and how to best document student learning through integration of vocational and academic instruction. In addressing the range of local curricular and programmatic issues regarding academic integration and "all aspects of the industry" instruction, the following elements should be considered:

- teacher planning and coordination
- curriculum emphasis
- course materials
- student and teacher scheduling
- new teacher training and staff development
- work-based learning
- student assessment

Teacher Planning and Coordination

Integration of vocational and academic education is no small feat. Faculty from the various disciplines must work together to align and sequence coursework and to make it mutually reinforcing. Local administrators must allow substantial planning time for this work.

It is not enough merely to export a few vocational competencies into the academic setting, nor merely to import a few academic competencies into the vocational setting. These practices are self-reported by many practitioners as representing adequate integration within their schools. However, schools can take certain steps to indicate that they are doing more. To get at those steps, the assessment must ask: Do vocational and academic teachers see their mission as joined? Are they, collectively, working up their own lesson plans, including observations, experiments, readings, demonstrations, writings, and other things that fit within the flexible system?

When teachers in various disciplines produce their own teaching materials and thus gain ownership over those materials, they find themselves less threatened by the "difficulty" of other teachers' subject matter. Teachers attuned to the methods and materials of the language arts and social studies find that the methods, language, and thought processes of the sciences can easily be conjoined with the materials they are using in their disciplines. Inversely, scientific materials and subjects (including vocational ones) can be enriched and enlivened by the application of a more humanistic, qualitative, and consciously subjective approach.

Data sources available to assess planning and coordination:

- teacher schedules
- inservice calendars
- local staff development policies
- state staff and curriculum development offerings
- visits to exemplary programs

Curricular Emphasis

We experience reality seamlessly, not in fragmented disciplines. We do not ordinarily consider events and processes in terms of their distinct historic, physical, mathematical, and aesthetic components. Teaching should try to approach our experience of reality. The assumption here is that the constant switching of gears by teachers and students throughout the day, from subject to disconnected subject, results in an onerous fragmentation of learning. Academic curricula, like vocational curricula, suffer from a narrow conceptualization. In seeking to unify the curriculum, the new Act envisions an integrated, broad view of industries and their relationship to the economic and social realities of communities.

Multidisciplinary efforts cannot be generated abstractly. There must be an organizing theme with enough power and coherence to drive the entire curriculum. An "all aspects of the industry" focus provides a foundation for creating such themes. For example, the study of environmental management is enriched by science and vocational teachers working together, and the study of affordable housing is enhanced by the collaborative efforts of carpentry, architectural drafting, and social studies teachers.

Education must move away from a process that teaches skills as separate entities to one that uses analogies and connections between skills as a way to sharpen students' powers of observation and expand their experience. This may help prevent students from being "turned off" by one or another specific subject. To further enrich this integrated learning, teachers must be urged to use as many resources from the community as they can muster. Bringing the outside world into the classroom (and the classroom to the outside world) will help break down the artificial, counterproductive division between school and the "real" world.

In its experimental, hands-on component, vocational education has its greatest strength. Fundamental to its approach is an understanding that some learners need to work with their hands to inspire and open their minds. By integrating disciplines and learning styles, students experience a holistic world which becomes a laboratory for acquiring knowledge and skills, and for learning to pose and solve problems.

Data sources available for assessing curricular emphasis:

- course catalogues
- course objectives and syllabi
- texts and other course materials
- instructional methods
- student assessments
- class assignments
- visits to exemplary programs

Course Materials

Vocational personnel are inundated with trade journals, association mailings, and staff development activities which emphasize a narrow-skill, occupationally specific focus. New materials must be developed and teachers must be provided opportunities to shape them. The practice of covering material only sufficiently enough to prepare for the next course in sequence must change. Rigid instructional patterns in which the entire class studies the same thing at the same time also must change. Reliance on textbook dominance, emphasis on "coverage," and student memorization must be reduced.

Although there is no one best way to organize instructional materials, these materials must encourage students to explore concepts as they relate to the students' lives. Vocational materials must allow students to be actively engaged in broadly examining phenomena related to industries. These materials must encourage students and teachers to be active social inquirers and participants in their own communities. For example, vocational programs can explore and perhaps assist in providing low-income housing development, childcare, or services for the elderly. Active problem posing and problem solving should be a priority. Use of primary source materials should take precedence over use of secondary materials such as textbooks. Materials should involve student writing across the entire curriculum, including the vocational subjects, as a tool for learning.

In the work world, individuals rarely operate in isolation. Yet most vocational instructional material deemphasizes cooperative or group learning (e.g., competency-based vocational education focuses on duties and tasks performed by the individual learner). Materials should focus on individual understanding within group processes. They should promote group exploration, discussion, questioning, and explaining.

Data sources available to assess instructional material:

- exemplars from model programs
- samples of district curricula
- samples of state-mandated curricula
- student writing samples
- evidence that teachers are developing their own new materials
- visits to exemplary programs

Student and Teacher Scheduling

Most secondary schools are constricted by anachronistic scheduling. They are hampered by rigid requirements for numbers of "contact hours" in each of the traditional Carnegie unit courses. Additional requirements for shop time compound the problem. An integrated, multidisciplinary approach seeks depth of student understanding, rather than breadth of "coverage" of various subject matters.

Vocational administrators usually present scheduling as the primary roadblock to change. The schedule—the status quo calcified—fragments academic and vocational learning into unrelated periods throughout the day and week. This raises the question of whether it is possible to integrate vocational and academic instruction without physically integrating vocational and academic instructors.

Much has been written about the isolation of teachers, yet little has been done to end it. Most teachers know little about the practice of other teachers whom they have worked close to for years. Team teaching helps end isolation and combat the notion of the individual as sole transmitter of information. It also allows for the type of multidisciplinary benefit described above. Back-to-back scheduling (e.g., having a vocational and a social studies class share two periods) allows teachers to work together and creates opportunities for common planning time. In schools where these techniques are tried, teachers often feel liberated from former constraints and enjoy the unanticipated pleasure of collaborating.

Data sources available for assessing scheduling:

- master/teacher/student schedules
- teachers' room assignments
- staff development activities
- district graduation requirements
- state vocational class hour requirements
- visits to exemplary programs
- credit mechanisms for multidisciplinary study

New Teacher Training and Staff Development

Even a cursory examination of most states' teacher-certification requirements reveals a continued emphasis on narrow-skill training for future vocational educators. Similarly, course catalogues for teacher-training programs at the undergraduate and graduate levels do not depart from sustaining the status quo. What forms of guidance from state and officials will best encourage these changes? Certainly, at the state level, the connection between teacher-training courses and teacher-certification requirements is great, as courses are generated which serve certification requirements. The assessment must closely examine the extent of state officials' commitment to bringing about these changes. Vocational educators are a maturing work force; therefore, reshaping the expectations of new practitioners entering the field has great potential for change, even in the near term.

It is also critically important that state and local staff-development opportunities for teachers and requests for proposals for training reflect the Act's new requirements.

Data sources available for assessing new teacher training and staff development:

- state vocational certification requirement
- teachers' college curriculum content and emphasis
- state and local staff development activities
- state requests for proposals for staff development
- local initiatives to train and retrain teachers

Work-Based Learning

Cooperative placements, work-study, and apprenticeship programs can do more for students when they are integrated with academic learning and when they embrace an "all aspects of the industry" approach. These programs can go beyond the work experience, integrating work-based learning with school-based learning. Rather than funneling students into a single occupational slot, an "all aspects of the industry" orientation would diversify students' work placements and rotate them through various sectors of an industry. Thus, a student in a hospital-based program would move through the nursing, finance, dietary, and other departments.

Experiential placements fail when students are the slender thread between the school and work cultures. An integrated structure, planned by school and employer staff, must be in place *before* the student enters the program. For example, a program at the Polaroid Company joins students, teachers, and work supervisors in daily seminars where all participants write reflectively about their common experiences.

Data sources available for assessing experiential placements:

- cooperative agreements between schools and employers
- interviews with students and employers
- examination of policies and procedures of model programs

Student Assessment

As vocational education integrates with academics, a broader range of students' abilities must be assessed. Unlike typical classroom procedures that rely heavily on linguistic and mathematical abilities, applied learning activities such as those that take place in vocational classrooms place greater emphasis on learning in context.

New methods for student assessment must emphasize the highly individualized ways in which people learn. The new Act's emphasis on integration commits itself to students' deep understanding of and experience in the core aspects of industries. Student assessments must reflect students' use of that knowledge as they explore and seek to solve, within the context of their own communities, the problems that face those industries. Such efforts go far beyond the bounds of traditional assessment measures.

Thus, as integration takes place and multidisciplinary learning ensues, new measures of student learning must be developed. The portfolio, a collection of student work, is coming into increasing use. Such portfolios for vocational students should include elements of student learning which reflect the new, broad, industry-wide focus.

Data sources available for assessing student progress:

- student portfolios
- graduation rates
- dropout rates
- rates of participation of special-populations students in high-quality programs
- college placement rates and other outcome measures

CONCLUSION

This paper focuses on ways to recognize meaningful change in local vocational programs. The National Assessment must determine what these new practices look like, and whether there is meaningful movement toward such practices. In this regard, it is important to identify schools with exemplary programs and undertake qualitative research which closely examines the process of implementation in these schools and disseminates the findings to others.

It is also critical that the National Assessment analyze state and federal guidance. Local implementers cannot succeed without strong support and encouragement at all levels. The assessment should examine how this necessary support will be forthcoming. How can the U.S. Department of Education and the states best offer sufficient guidance to local practitioners to redirect their programs as required by the new Perkins Act? Will the call be clear for a new, dramatically different practice?

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The Effects of Federal Requirements Regarding Articulation Between Secondary and Postsecondary Vocational Education Programs

Roy Peters, Jr. and Richard C. Makin*

INTRODUCTION

The Carl D. Perkins Vocational and Applied Technology Education Act Amendments of 1990 (P.L. 101-392) mandate that the Office of Educational Research and Improvement conduct applied research on aspects of vocational education specifically related to the Act. One study mandate is "the effect of federal requirements regarding articulation between secondary and postsecondary vocational education programs."

Undoubtedly, several aspects and provisions of the Act can potentially affect secondary/postsecondary articulation. These include:

1. Vocational education programs that offer coherent sequences of courses leading to job skills.
2. The integration of academics and vocational education through coherent sequences of courses so that students achieve both academic and occupational competencies.
3. Tech-prep programs as an allowable activity under uses of funds at the local level.
4. Title III tech-prep education programs that include a common core of required proficiency in mathematics, science, communications, and technologies, designed to lead to an associate degree or certificate in a specific career field.
5. The establishment of postsecondary vocational education as a separate program in the federal legislation.

The purposes of this paper are to present four major areas related to a national assessment of the effect of federal requirements on secondary/postsecondary articulation. These areas include 1) background information, 2) the issues to be investigated, 3) the principal data sources and methods of inquiry that might be used to investigate the issues, and 4) the problems to anticipate when investigating the issues.

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BACKGROUND

Hull and Parnell (1991) broadly define articulation as a process for linking two or more educational systems within a community to help students make a smooth transition from one level to another without experiencing delays, duplication of courses, or loss of credit. A decade earlier, Con and Hardy (1978) described articulation as a process, an attitude, and a goal:

> As a process, articulation is the coordination of policies and practices among sectors of the education system to produce a smooth flow of students from one sector to another. As an attitude, it is exemplified by the willingness of educators in all sectors to work together to transcend the individual and institutional self-interest that impedes the maximum development of the student. As a goal, it is the creation of an educational system without artificial divisions, so that the whole educational period becomes one unbroken flow, which varies in speed for each individual, and which eliminates loss of credit, delays, and unnecessary duplication of effort.

In recent years, increased emphasis on articulation has been stimulated by state and federal mandates and a growing interest in educational reforms. In a review of articulation and transfer, Kintzer (1989) reported that 30 of the 50 states currently had transfer guidelines or policies encompassing the major segments of higher education. At least six of the states researched detailed agreements on vocational-technical course and credit transfer.

When investigating secondary/postsecondary programs with occupationally related curricula, Long et al. (1986) reported that articulation planning efforts were currently underway in 29 states. These articulation efforts included vocational-technical schools, high schools, community colleges, 4-year universities, and businesses as joint participants. Articulation efforts varied greatly from institution to institution, based upon numerous variables such as institutional size, resources, program goals, and philosophies.

Long et al. also identified two primary models of secondary/postsecondary articulation efforts: 1) time-shortened models and 2) advanced skills models. They reported that the purpose of the time-shortened model is to eliminate unnecessary educational redundancy by granting advanced placement to secondary students entering a 2-year college program. The National Council for Occupational Education (1989) reports that the advanced placement models are the most common and least complicated form of articulation efforts since fewer curriculum changes are required. The majority of the time-shortened programs are course-based, through coordination of syllabuses or task lists (Long et al., 1986).

In contrast, advanced skill models focus on delivering a more advanced and concentrated content. Generally, advanced skills models are categorized as core curriculum, which is widely recognized as tech-prep or vocational 2 + 2 programs (Long et al., 1986). Tech-prep programs provide advanced technical skill preparation in the applied sciences, mathematics, and technical writing. The 2 + 2 program is a 4-year articulation plan which includes 2 years of secondary training and 2 years of training at postsecondary institutions (McKinney et al., 1988).

Articulation has been found to be a viable strategy in addressing both student and interagency concerns. The benefits of articulation identified for students include allowing students to gain advanced standing or college credit, reducing instructional repetition, and providing more course options. Articulation further motivates students to continue their education through recognizing advanced credit and serving as a career exploration strategy (Fadale and Winter, 1987). In addition, McKinney et al. (1988) suggested that articulation encourages student development by improving programing and facilitating student transition from one educational setting to another.

From the educational institution perspective, articulation provides strategies to address community service obligations and the opportunity to avoid costly duplication of facilities and resources. By exemplifying cooperation among institutions, articulation subsequently serves as a public relations tool and demonstrates efficient use of taxpayer money (Fadale and Winter, 1987). A frequently mentioned benefit of articulation for secondary institutions is image enhancement of vocational education as a result of the visible link with higher education institutions. This link was further found to enhance recruitment of high-quality students into vocational programs. Increased enrollment, higher retention, curriculum revision, and program improvement have also been listed as institutional benefits (McKinney et al., 1988).

As noted by McKinney et al. (1988), despite the number of articulation programs in existence, there is relatively little evaluation information regarding articulated program effectiveness or the appropriate processes for implementation. They investigated the degree of institutional success in achieving articulation program goals. In that study, it was found that the most commonly accepted goals of vocational-technical education articulation programs were increasing service to students, program improvement, increasing student retention, and increasing service to employers. Results indicated that institutions had the most success meeting the program improvement and increased service to student goals.

Several studies have sought to isolate the characteristics of successful articulation programs. Administrative commitment from the top, leadership, faculty involvement, communication, and common goal focus have been identified as essential elements (McKinney et al., 1988; Long et al., 1986; and Farland and Anderson, 1988). Leadership and commitment from the top are essential to articulation programs because the leaders serve as guiding, motivating, and driving forces, and lend political, emotional, and financial support to faculty. Without common goal focus, communication, and faculty interaction, it would be impossible for articulation efforts to develop.

ISSUES TO INVESTIGATE

For those conducting the National Assessment, the principal issues warranting investigation may well be more than can be reasonably addressed, given the parameters set forth in the federal legislation. However, certain of these issues are resolute and are based on the assumption that various aspects of the federal legislation that can lead to secondary/postsecondary articulation will, in fact, do so.

These issues will include 1) a description of the articulated programs being assessed, including the degree to which the federal requirements result in articulated programs and student participation in such programs, 2) the outcomes and effectiveness of articulation between secondary and postsecondary program, and 3) the factors which underlie exemplary articulation programs.

Articulated Program Descriptions

As was briefly discussed in the background literature review, articulation initiatives can be implemented in various ways. Regardless of whether or not the National Assessment researchers opt to operationally limit the definition of articulation (further discussed under the section "Problems to Anticipate") it would be useful to become more familiar with the articulation models that are the intent of the investigation.

Characteristics and issues related to the articulated programs that could be described include the following:

1. Type of articulation model (e.g., tech-prep, time-shortened).
2. Goals of the program (e.g., student retention, program improvement/educational excellence, and increasing the number and quality of graduates available for business and industry).
3. Program context variables (e.g., student characteristics, including ability levels; school characteristics; and community and economic characteristics).
4. Governance of the program.
5. Staffing and staff development.
6. Planning and evaluation.
7. Curriculum development.
8. Program support services.
9. Individuals' (including teachers, administrators, counselors, parents, students, and employers) understanding of, support for, and attitude toward the program.
10. Marketing of the program.
11. Human and financial resources.
12. Related operational issues (e.g., the articulation agreement, facility needs, and accreditation).
13. Costs and cost-effectiveness of the program.

In regard to operational issues, considerable attention should be given to describing how "common ground" is decided upon in the articulation agreement. At the secondary level, program outcomes are often associated with competency development, whereas course or degree completion is most often the targeted outcome at the postsecondary level.

In the Perkins Act, articulation agreements are defined as "a commitment to a program designed to provide students with a nonduplicative sequence of progressive achievement leading to *competencies* in a tech-prep education program." The way program outcomes at the secondary and postsecondary levels are meshed will be a major challenge in developing a successful articulation program and are of considerable importance to vocational education practitioners.

Although informative, a determination of the number and type (i.e., occupational area) of articulation programs may be difficult to achieve. It is possible that not all articulation efforts at the local level would be reported to the sole state vocational education agency.

In regard to types of articulated programs, it may be that health occupations programs are more likely to be articulated than are trade and industrial programs. Here again, identifying articulation programs by type may be difficult. However, the query should be made, on a state-by-state basis. The same rationale holds true for the number of students entering and completing an articulated program; that is, such data are an indicator of success or failure but are difficult to obtain on a comprehensive basis.

Outcomes and Effectiveness of Articulated Programs

The outcomes and effectiveness of vocational education programs are historically debated topics. No doubt there will also be debate on the outcomes and effectiveness of articulated vocational education programs. Numerous issues can and should be raised in relation to the outcomes and effectiveness of articulated efforts between secondary and postsecondary vocational education programs. However, the time frame of the study, discussed later in the paper, may be extremely limiting when investigating this issue. These questions can be asked in the contexts of the students and the institutions involved in articulation programs.

From the student perspective, the outcomes which might be assessed are, to a large extent, traditional and might be categorized as labor market, learning, and ancillary outcomes. They include

1. Employment (including job-related employment) and unemployment;
2. Course utilization rates (CURs);
3. Wage rates and earnings;
4. Employee satisfaction;
5. Employer satisfaction;
6. Occupational skill attainment;
7. Academic skill attainment;
8. Retention and attrition;

9. Continuing education (including bachelor of science degree programs);

10. Aspirations; and

11. Attitudes and values.

In assessing the above outcomes for students enrolled in articulation programs, it would also be interesting to compare these outcomes with groups of students who do not participate in an articulated program. Are either groups of students at a labor market or educational disadvantage?

In regard to program and institutional outcomes, the following questions can be asked:

1. Do student enrollments increase at the secondary and postsecondary institutions?

2. Are better quality students attracted to articulated programs?

3. Have program content and standards improved?

4. Are facilities and equipment being better utilized?

5. Is there actually less duplication of effort between the secondary and postsecondary institutions?

6. Do articulated programs lessen the attrition problem in the postsecondary institution?

The last question is particulary important in view of the fact that students who take only a few courses are no more likely to be employed or earn higher wages than those who take no courses at all (Goodwin, 1989). Obviously, the extent to which each question can be answered is contingent on the availability of baseline information.

Exemplary Articulation Programs

As in the previous discussion on the description of articulated programs, this portion of the assessment would require an extensive analysis of inherent contextual and process variables. These variables would include those listed in the previous section, but they would be investigated in a manner that would answer "how" and "why" questions. In essence, the assessment of exemplary articulation programs involves finding the outcome and determining "why" versus targeting the outcome and determining "if."

Obviously, identification of successful articulated programs would require an investigation of the factors which underlie such programs. The programs studied should be identified so as to accommodate, at a minimum, diversity in regard to population, economy, geographic region, vocational education governance structure, and federal funding level.

In addition to investigating those factors inherent in the articulated program, the National Assessment researchers should take into account related circumstances and forces that might have influenced development and implementation of the exemplary articulated programs. For example, what influence has the state accreditation agency exercised, and what role have enrollment trends at the secondary or postsecondary institutions had on development and implementation of articulation agreements? Also, who, if anyone, has wielded the most influence in the articulation initiative (i.e., the secondary or postsecondary educational entity), and to what extent do changes take place in each institution?

PRINCIPAL DATA SOURCES AND METHODS OF INQUIRY

Multiple data sources and methods of inquiry are required to investigate the issues outlined in the previous section. For example, case studies and surveys would serve as complementary research methods in investigating local sites that have initiated articulation linkages between secondary and postsecondary vocational education programs. Recommended data sources and methods of inquiry are presented in the following sections.

Previous/Ongoing Research and Related Literature

Previous research, ongoing research, and related literature are important data sources in the preliminary design of this study. As has been shown in the abbreviated literature review presented in this paper, articulation between secondary and postsecondary vocational education programs can by no means be considered a new direction for vocational education as a result of the Perkins Act.

An extensive review of the research and related literature on articulation is recommended to augment those areas addressed in this paper. When conducting the review of research and related literature, the National Assessment design team is advised that they are likely to find that a preponderence of the literature focuses on the operation of articulation programs and that the literature base on articulation outcomes is limited. Nonetheless, a more complete understanding of the issue will undoubtedly result from these efforts.

The following are recommended as possible sources of relevant research and related literature on articulation between secondary and postsecondary vocational education programs: *Resources in Vocational Education (RIVE), Resources in Education (RIE), Current Index to Journals in Education (CIJE),* and *Dissertation Abstracts.*

In regard to ongoing research, the National Center for Research in Vocational Education (NCRVE) is currently funding two projects related to articulation and, more specifically, to tech-prep. These are "Factors Influencing Tech-Prep Planning and Implementation" and "An Information Exchange on Tech-Prep Programs." Both projects will undoubtedly be of value to the National Assessment.

Surveys

In many large-scale assessments, surveys are typically a default method of inquiry. It is recommended that the articulation aspect of the National Assessment also be partially conducted through survey methods. Such methods will result in a "sketch" of the articulation undertaking drawn from a larger population. However, the outcomes obtained probably will not penetrate very deeply below the surface of the issue and measurement error may be a problem. There also may be a protest of "response burden" at the state and local levels.

There is uncertainty at this time as to whether or not the 50-state survey conducted by the NCRVE included an articulation component. (Public domain products are scheduled for release sometime this year). Regardless of the inclusion of an articulation component in the survey, both the NCRVE and the previous NAVE researchers possess valuable experience and insight in regard to this particular methodology.

It would seem reasonable to assess effects of the Perkins Act on articulation across all states. Assessing effects at the local level is more difficult, due to extreme variability in articulation program characteristics and issues. At the local level, investigating secondary and postsecondary articulation practices is feasible only by using a sample of eligible recipients.

Case Studies

In an effort to answer "how" and "why" questions and allow those who are being studied to speak for themselves, focus on contemporary events in articulated programs is highly recommended. As in previous national assessments of vocational education, case study methods should again be relied upon as a primary method of inquiry.

Ideally, the case study sites should be selected using predetermined criteria. They should reflect diversity in regard to geographic region, economy, vocational education governance structure, federal funding level, and population diversity. To develop a more in-depth understanding of a limited number of vocational education delivery systems, it is also recommended that a number of "core states" be identified (i.e., states which are involved in as many components of the National Assessment as possible).

Documentation

Documentation, or documentary analysis, is often viewed as an integral aspect of case study methodology. For the purposes of this study, documentation is viewed as a source of information in two contexts, the first of which is the case study of the exemplary sites.

When visiting the sites, the study team will want to review carefully a variety of documents related to the articulation initiative, including, but not limited to, letters, memoranda, and other communiques; agendas, announcements, and minutes of meetings; previous studies or evaluations of the site; mass media materials; and articulation agreements.

The states themselves are the second context in which documentation is a viable data source. The particular documents that should provide considerable insight into the articulation issue are tech-prep education RFP's, tech-prep proposals, and local applications or plans. The latter would document the extent to which eligible recipients are using Title II funds for tech-prep education. The former should clearly illuminate the manner in which Title III, Part E funds are being expended.

Two other documents which are likely to provide an indication of the effects of federal requirements on intrastate articulation efforts are state plans and federal performance reports.

Transcript Analyses

Transcript studies have been shown to be very useful for analyzing secondary and postsecondary participation patterns in vocational education and for estimating course utilization rates (Campbell, Orth, and Seitz, 1981; Hoachlander and Choy, 1986; and Tuma, Gifford, and Hoachlander, 1989.)

In regard to participation patterns, the National Assessment researchers could use the taxonomy developed for the previous national assessment. To compute CURs, all courses listed on the transcripts of the articulated program completers could be fed through the National Occupational Information Coordinating Committee matching matrix and mapped to the occupations they hold.

Wage Record and Other Existing Data Bases

Vocational educators are demonstrating a renewed interest in using the unemployment insurance wage-record system as an evaluation methodology. Use of wage records may be an alternative means for assessing measures for the labor market outcomes of articulated program completers.

When articulated program completer records are merged with unemployment insurance wage records, post-program earnings histories can be examined by participant characteristics, vocational program, geography, Standard Industrial Classification status, or any combination of these variables. A comparison group could also be included as part of the evaluation. Other advantages of the methodology: 1) The data are more accurate than self-reported data; 2) Data are obtained for a larger percentage of students than can be collected through followup mail surveys; and 3) Longitudinal followups can be implemented at reduced costs and in less time.

In spite of its advantages, this methodology is problematic. First, if the issue of articulated program completer earnings is being investigated, it may be difficult to differentiate part-time employment or employment initiated after the reporting period began, since the rate of pay is not always included as part of the employer report. Second, the Standard Industrial Classification reflects the nature of the industry versus the specific occupation in which the articulated program completer would be employed. This would be of concern in determining the "relatedness" of the articulated program to job placement. Third, the methodology is contingent upon a fairly sophisticated, automated student record-keeping system. (For a thorough review of the uses and limits of unemployment insurance wage records, see Stevens (1989), *Using State Unemployment Insurance Wage-Records to Evaluate the Subsequent Labor Market Experiences of Vocational Education Program Leavers.*)

Based on the principle of using a common element to match records from two data bases, higher education data bases might also be assessed to determine the extent to which articulated program completers continue on in postsecondary education and complete the requirements for a bachelor of science degree.

PROBLEMS TO ANTICIPATE

As in any assessment in an educational setting, there are numerous methodological concerns as well as problems specific to the National Assessment's study of this topic. Although none appears to be insurmountable, all warrant attention during the conceptualization and pre-implementation stages of this assessment.

Defining Articulation

In assessing the effect of federal requirements regarding articulation between secondary and postsecondary vocational education programs, the National Assessment researchers are faced with the difficult task of defining or setting an operational limit on the concept of articulation. This task is difficult in that articulated programs between secondary and postsecondary vocational education programs vary widely in operational details and primary goals. For example, the three basic types of articulation programs are time-shortened, tech-prep, and 2+2 (McKinney et. al, 1988). These types of articulation programs can be conceptualized as falling on a continuum, with time-shortened programs being the least complex and 2+2 programs the most complex. Numerous other variations of articulation programs fall along the continuum and undoubtedly outside the types of articulation programs referenced (e.g., 2+2+2).

Consequently, a critical question that must be resolved when designing this study is: What type of articulation program is being investigated? (Or will it be the the purpose of the assessment to investigate articulation programs along the continuum?) In that tech-prep education is an integral aspect of the Perkins Act in both Title III, Part E and an allowable expenditure at the local level, the study design may need to focus on that type of articulation program.

Time Frame of the Assessment

The Perkins Act requires that a final report, summarizing all studies and analyses completed after the assessment, shall be submitted to the Congress on or before July 1, 1994 [Sec. 403(c)(2)(B)]. As a result, 1992-1993 is probably the last school year for which data related to articulation initiatives could be collected. In regard to only one phase of an articulation program (i.e., preparation for program implementation), Belcher (1991) stated that "the first decision by administrators who propose to implement tech-prep associate degree programs should be to allow at least 12 months to conduct research, identify the issues, and address as many as possible prior to implementation." Obviously, the time frame mandated in the legislation will be problematic, particularly in regard to assessing articulation outcomes.

Undoubtedly, countless articulation efforts will be undertaken as a direct result of the tech-prep language in the legislation. The question is: To what extent can true outcomes be assessed? (The assumption is that the amount of time an articulation program has been in operation will be a factor in these outcomes.) It seems reasonable to believe that relatively few of the articulated programs will have been in operation long enough to resolve program difficulties and produce optimum results.

1990 Perkins Act Articulation Initiatives

As can be seen in the literature, articulation between secondary and postsecondary vocational education has been implemented in various forms prior to the passage of the 1990 Perkins Act. For the most part, articulation initiatives undertaken before the 1990 Act are not a result of federal legislation.

The obvious problems are 1) separating articulation initiatives that were implemented as a result of the federal legislation from those which already existed and 2) accounting for the effects of the prelegislation articulation programs on 1990 Perkins Act articulation programs. Here again, it is reasonable to assume that the time period over which the articulation program has been operable and articulation outcomes are correlated, as are previous experience with articulated programs and articulation outcomes.

If the purpose of the study is to assess only the effect of the federal requirements in the 1990 Perkins Act on articulation between secondary and postsecondary vocational education programs, it will be necessary to incorporate time-oriented items on the data collection instruments to establish the start-up date of the program. At the same time, it would be important to gain a historical perspective of the local site or the state regarding articulation. This also could be ascertained through appropriate items on the data collection instruments.

State Resources and Data Bases

Massive state educational budget deficits and reduced discretionary funding authority under the 1990 Perkins Act are forcing many states to reduce vocational education staffing. If state vocational education personnel are perceived as a resource for collecting or coordinating data collection, a potential problem exists. At a minimum, collecting and reporting data on a statewide basis can be expected to be a tedious undertaking.

Since articulation initiatives have historically been associated with low enrollments and scarce financial resources, it may be that articulation arrangements are catalyzed by those factors rather than by federal requirements. Differentiating the effect and determining the interaction of federal requirements and limited funding may be problematic.

If any portion of the assessment is dependent on widespread use of vocational education data bases at the state level, problems are likely to be encountered due to incomplete and, in some cases, nonexistent data bases. Goodwin (1989) reported that the principal problem with measuring labor-market outcomes on a state or programmatic basis is the inadequacy of data. Student followups are frequently characterized by unacceptably high levels of nonresponse or "status unknown" reports.

(Further information and a historical review of efforts to collect national information are reported by Hoachlander (1989) in an insightful document, *National Data Needs for Vocational Education*.)

Methodological Concerns and Technical Considerations

Many methodological concerns or technical considerations are associated with each method of inquiry. Although these concerns and considerations do not constitute irresoluble problems, they do warrant attention and require time to resolve. For example, if a mail survey is used to gather data at either the state or local level, consideration must be given to the type of sample, question wording, followup procedures, reliability of the instrument, amelioration of measurement error, threats to external validity, pretesting, and nonresponse, as well as to the design, layout, and format of the questionnaire.

Each of these methodological concerns or technical considerations must be thought through in terms of the underlying issues. For example, in sampling, considerations should include whether or not to use a probability sample, who makes up the sample frame, and the size of the sample.

The same rationale holds true regardless of the method of inquiry; that is, methodological concerns and technical considerations must be adequately addressed to ensure valid, reliable, and practical outcomes. The purpose here is not to present a comprehensive review of such concerns and considerations, but rather to remind the National Assessment researchers of the many decisions that underlie an assessment of the effects of federal requirements on articulation and to caution them that, in many cases, it often takes longer than anticipated to resolve these issues.

SUMMARY

Based on data collected from key state officials responsible for secondary and postsecondary occupational education programs and data provided by state directors of vocational education to identify articulation efforts, Bender (1973) concluded:

> Society, its legislative representatives, and professional educators have come to realize that each component unit of the educational system must be in its place, interconnected, and joined to form a true continuum. This does not mean the loss of special purpose, mission, or identity of each unit. It does mean, however, that the educational delivery system cannot have individual components going in opposite or independent directions (p. 37).

Confronted with the challenge of developing a highly educated, world-class work force, the above conclusion takes on even greater significance nearly 20 years later. It is absolutely imperative that secondary and postsecondary vocational education institutions work together to develop and sustain quality programs to serve the majority of Americans who are already working or who can potentially enter the work force.

Obviously, assessing the effects of federal requirements on articulation between secondary and postsecondary vocational education programs is an extremely complex undertaking. Nonetheless, such an assessment is needed not only to report to the Congress but also to provide vocational practitioners with an indication of how well they are doing in preparing the work force of the future.

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Views on Assessment of the 1990 Perkins Act

Joseph W. Grimsley*

This paper discusses three major areas of change in the 1990 Perkins Act: targeting disadvantaged populations, performance measures, and tech-prep programs.

TARGETING DISADVANTAGED POPULATIONS

With the new targeting criteria in the 1990 Perkins Act, the postsecondary system will face a difficult adjustment that will delay the effectiveness of the Act. Heretofore, most of the Perkins funds were generally blended with state and local vocational education funds without individual knowledge of recipients of services. The 1990 Perkins Act requires that future grants to local schools and colleges come in narrowly focused grants, with the individual recipients identified by auditors and assessors.

The issue of less effectiveness involves increased recordkeeping and more categorical program management. It is highly likely that many operators will narrowly interpret the use of vocational education funds and focus on vocational education rather than on a broad-based educational program with math, science, English, and social studies in the forefront. It will take a year or two to adjust to the new criteria and to determine what is and is not permitted. The more specifically targeted disadvantaged population will seem more isolated from the mainstream than in the past as they are singled out once again as different. (Note the stigma attached to free lunches, food stamps, etc.) From the author's experience, specific dollar targeting lessens involvement of the target populations in the overall school efforts in that members of those populations are counted off for separate attention (for recordkeeping purposes).

Targeting disadvantaged students is not, in itself, a bad idea. However, it will focus the dollars available from the Perkins Act on the most difficult to educate and train. It probably will cost more per student than before, cost the program overall public support, and produce less positive results per dollar invested.

Therefore, concerns the National Assessment should address include:

1. What is the degree of shift from previous recipients to new recipients?
2. What are the per student costs compared to prior years?
3. What level of disadvantaged students will now be served?
4. Does the new program target most severely disadvantaged students or others?

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5. What is the impact on overall vocational education when disadvantaged targeting requirements shift resources away from general support?

6. Will there be a smaller overall vocational education program because of the new Perkins Act's shift away from general support?

7. Will targeted disadvantaged programs offer a good tech-prep approach with requirements for integrating academics and vocational education?

Data Sources

Most schools and colleges have formal data bases required by the state education or community college agency. These data bases are usually called uniform accounting and student FTE accounting systems. Most colleges also have record systems which list the students by course. The students are often recorded by their disadvantage, at least in terms of eligibility for financial aid, specific handicap, and participation in other programs which are open to disadvantaged students. Most of the local college record systems are fed by magnetic tape to the state agency, which can generate state-level summaries of most required data.

Modern student record systems are very sophisticated. They include many personal characteristics, placement test scores, the handicapping condition, transcripts to date, the educational plan, special needs, and an increasing amount of academic tracking data regarding classroom performance during a quarter or semester. Such systems are coming into use in both public schools and community colleges. North Carolina is already using these record systems. They facilitate the ability to report on any type of student in response to new data requirements. It would be shameful to ask colleges and school systems to buy large new computer systems and write expensive software programs to replicate, in large part, data that are already being collected. Lack of federal vocational education administrative funds at the local college and school level leads to negative feelings if large new reporting systems are required. Administrators' loss of morale may mean that students may not receive the level of attention they deserve.

PERFORMANCE MEASURES

The overall issue of performance measures raises concern about increased data collection requirements, rather than fear of accountability. In the North Carolina Community College system, there is a set of accountability capabilities that should be acceptable for National Assessment purposes. For example, North Carolina has established "critical success" factors which measure many overall aspects of program effectiveness. All southern states belong to the Southern Association of Colleges and Schools (SACS), which accredits colleges and establishes extensive criteria for accreditation. SACS also requires campus-level "institutional effectiveness plans" which are annual self-studies that encourage ongoing institutional effectiveness throughout the normal 10-year accreditation cycles.

North Carolina may be more advanced than some states in that it has a strong state-level oversight operation. However, North Carolina, South Carolina, Kentucky, Florida, Virginia, and some other states have sophisticated reporting systems involving many measurable factors. These measurable factors far exceed those included in the Perkins Act.

For the National Assessment, there is an issue related to management efficiency and including the concerns of states and locales in the assessment. Heretofore, state and local concerns seemed to mean very little to Congress. Now, states and local governments are heavily involved in educational reform and the Congress ought to understand that the Perkins Act is a small part of the overall movement. What is happening overall in vocational education? Perhaps a great deal is being done for the target population which is not reached by the Perkins Act, since states know that Perkins money cannot reach all the target populations. The concern is that the National Assessment will overlook both the vocational education offered to disadvantaged populations with funds other than Perkins and the performance assessment systems developed with other funds. (For example, North Carolina Community Colleges receive $450 million from the state legislature.) An issue for assessment is: Will standards and performance measures help improve vocational education and force programs into the tech-prep format?

ASSESSMENT OF TECH-PREP/ASSOCIATE DEGREE PROGRAM

Dr. Dale Parnell, president of the American Association of Community and Junior Colleges (AACJC), developed the thesis for tech-prep in his pioneering book, *The Neglected Majority*, published by AACJC in 1985. The premise was that only a minority of students pursue the perceived high school track of excellence, college-prep. However, the nation needs up to 75 percent of all high school students to be prepared for a postsecondary education to create a world-class work force in America. Parnell recommended focusing the neglected middle, average high school students toward a technological education, with the goal of achieving the associate degree from a community or junior college, as a minimum.

Parnell's premise further established that most American dropouts come from this neglected middle majority, not from the learning disadvantaged or college-prep students at either end of the spectrum. Research on dropouts has indicated that lack of purpose clouds the middle students' view of educational purpose and leads them to give up on purposeless education. Tech-prep is designed to focus these middle students early in high school toward a worthwhile, financially rewarding, and open job market for community college-trained technicians (i.e., nurses, computer operators, bookkeepers, policemen, EMH technicians, mechanics and machinists, etc.).

The tech-prep/associate degree program is one of the three most important changes in the 1990 Perkins Act. Since tech-prep is the first truly new educational content title in vocational education in recent history, it is very important that the U.S. Department of Education take great care to focus more deeply on program content than on who receives the services.

It is the author's premise that tech-prep can be the most significant development in high school education in the past 30 years (since creation of the college-prep track). It will meet this high goal only if the funds allocated in each state and received by its local schools and colleges truly support integration of academic and vocational education.

Integration of math, science, English, and social sciences into a program with emphasis on vocational education is a vital component of the tech-prep/associate degree program. Under this program, students would be expected to take grade-level academics (the same as required for college-prep students in most states) throughout the high school career, and these grade-level academics would be taught with the goal of enrollment at a community college. North Carolina requires 20 courses for graduation, including 14 academic courses: three units of math (in tech-prep these are algebra I and II and geometry); 4 years of English; three sciences; three social sciences; and one physical education/health course. In the vocational education program, if these are given equal weight with the other six required courses for graduation, the vocational education program will be effective even though it involves no more than the six vocational courses. The most important part of the integrated education program is the 14 basic required courses.

The tech-prep/associate degree program also attempts to increase the math, science, and communications instruction in vocational education courses, trying at all times to teach the academics appropriate to the grade level so that upon graduation the student will be qualified to enter and perform effectively in a collegiate associate degree program. A premise of the tech-prep/associate degree program is that the middle majority of high schoolers can be focused toward postsecondary education, will work hard to achieve at grade level, and will get the formal education required for a carefully articulated high school/community college degree program. It means that the high school student will have vocational education courses which build academic abilities rather than job-entry skills; the community college will provide higher level job-entry skills as the student pursues the associate degree.

Another premise is that algebra and geometry courses should not be altered for vocational education students. In upper grades, applied math and other applied courses can be added as part of the vocational education experience, but never at the expense of the formal math and science courses also required for college-prep students. The major concern about the Perkins tech-prep effort is that it will be captured by high school vocational education directors and teachers who will continue to isolate vocational education from the academic mainstream. Disadvantaged students will be the big losers in this scenario. The high schools must convince themselves and these students that the students can learn upper-level math, science, and communications, and that these academic skills are the basis of good vocational education and the future associate degree.

Finally, the legal requirement for a collaborative effort between public schools and community colleges to articulate the requirements of the associate degree with high school vocational education should be the means by which the appropriate programing takes place. If this is not done, the program is likely to fail. This should be an item in the National Assessment.

Many aspects of this critical new innovation in American education, tech-prep, should be assessed, including:

1. The continuity of learning from the high school level to the community college level to entry and achievement in the job market.

2. The integration of academics in tech-prep programs (e.g., how many vocational students take higher level math such as algebra, geometry, and calculus).

3. Context-based teaching and learning. (Are applied academics and basic skills integrated into vocational education courses; are grade-level communication (English) skills and math skills required in papers and projects involving different vocational sequences?)

4. Competency-based teaching techniques, to determine if vocational education students are really learning the full set of competencies in a field rather than only the introductory and hands-on skills. (Are higher-order thinking skills utilized?)

5. The depth of the relationship between public schools and community colleges in planning, articulating, improving, and operating a true tech-prep partnership. Items should include:

   a. Is there a written agreement between the two boards?

   b. Are chief executive officers involved and committed? Do they meet?

   c. Are joint steering committees and joint articulation committees active?

   d. Are both staffs adequately oriented toward the purposes of tech-prep?

   e. Are math, science, English, and social science courses articulated with appropriate vocational courses? Are teachers and department chairs from both systems involved?

   f. Are students actively recruited to be part of the tech-prep/associate degree program?

   g. Are tech-prep student records monitored carefully for course of study?

   h. Are counselors trained and committed to tech-prep students and programs? Do counselors have associate degrees?

   i. Are annual reviews and revisions made, results reported publicly, and programs changed to respond to shortcomings?

   j. Are vocational courses upgraded regularly by articulation committees for content and equipment?

   k. How do tech-prep students do on community college placement tests?

   l. How do tech-prep students do in community college courses?

   m. What are tech-prep students' graduation rates?

   n. How do tech-prep students do in placements in job fields after receiving the associate degree?

6. Whether or not the tech-prep/associate degree program develops into a respected program of educational excellence on par with the college prep program. (Parnell has repeatedly stated that vocational education has one major defect: prestige deficiency. That lack of prestige has robbed vocational education of its credibility with business and industry, postsecondary institutions, and the general public. The National

Assessment should try to determine whether the new Perkins Act, with emphasis on integration of academics and the tech-prep/associate degree program, will really bring about a vocational education revival and increased prestige. This could be done through national polls. The prime target should be employers, community colleges, teachers, administrators, and the students themselves.)

The Tech-Prep Target Population

Tech-prep is designed to reach the "Bart Simpson" academic underachiever. It is important for the National Assessment to evaluate whether tech-prep reaches this target population. The students usually take general education and are characterized as

1. underachieving in school (based on known abilities);
2. uninterested in schoolwork (take easy courses);
3. high potential as dropouts; and
4. underprepared as future community college students.

These general education students represent a majority of high school students and will make or break America in the next century. The Congress has recognized the importance of raising the expectations of this majority and has focused the tech-prep title in this new direction. We need to know

1. The effect of tech-prep on dropout rates among target students;
2. The trend in taking higher math and English and technical courses among the target students;
3. The target students' retention rate after enrollment in community colleges; and
4. The status of those middle students not taking tech-prep.

Community College Articulation Role

Tech-prep calls for close collaboration between community colleges and public schools in order to articulate the curriculum from the high school level to the 2 years required for an associate degree (in applied science). The tech-prep title in the new Perkins Act calls for formal agreements between the colleges and schools. The congressional intent was to ensure that a large majority of American students meets the educational requirements of 2- or 4-year colleges, and that undermotivated and underachieving students are prepared to achieve education at least to the 2-year college level. Implications for the National Assessment include:

1. Does the tech-prep program run parallel to college-prep but not replace it?
2. Does it build high school academic-core education for entering 2-year colleges?

3. Does it lead to an associate degree program?

4. Does it include strong technical courses, including math and science concepts built around clusters of occupations at the community college level?

5. What is the level of community college participation in planning, designing, and monitoring the local tech-prep programs?

CONCLUSION: INTEGRATING ACADEMIC AND VOCATIONAL EDUCATION

It appears obvious that Congress intended that some form of standards arise from this legislation that would help move toward a national consensus on the meaning of integrating academics and vocational education. Two types of approaches are likely to develop. Which approach dominates in the next 4 years is a subject for study. The "separate but equal" approach involves offering the academic core curriculum "straight up": English, algebra, science, and social studies, with no compromise or direct technological applications. The "applied" approach attempts to build high-level academic competencies into high-level technology courses with the goal of teaching academics and technology in the same courses.

In the National Assessment, an effort should be made to determine which of these approaches was used to best advantage in reaching the underachieving "middle" students. Both approaches have a great deal of potential, but community colleges will probably prefer the academic core curriculum over applied academics, while high school vocational educators will prefer the applied academics. Community colleges will want strong stand-alone math and science skills as the base for higher education courses. High school vocational education leaders will probably want a more limited view of academics and more interest in vocational competency and completion of the vocational course at the end of high school. Questions for the National Assessment include:

1. What is the dominant approach to integrating academics and vocational education in tech-prep programs?

2. Does one approach prove more motivating and academically effective than the other?

3. Does one approach make a better community college completer than the other?

[Note: A recent book which captures the national tech-prep experience to early 1991 is *Tech Prep Associate Degree: A Win-Win Experience*. It was written and compiled by Dan Hall and Dale Parnell and printed in Dallas, Texas, by the Center for Occupational Research and Development.]

Part 2:
Funding Issues

Analyzing Federal Expenditures for Vocational Education Program Improvement

Gary Hoachlander*

INTRODUCTION

Congress has traditionally asked three questions about federal spending for vocational education:

- What does vocational education cost?
- What do federal dollars buy?
- What impact does federal spending have on vocational education programs?

These seemingly simple but important questions have proven exceedingly difficult to answer. This paper explains why and suggests some possible approaches the National Assessment of Vocational Education might take to inquire about federal spending for vocational education.

WHAT DOES VOCATIONAL EDUCATION COST?

Federal Spending as a Percentage of Total Spending for Vocational Education

Federal spending represents a rather small fraction of total spending for secondary and postsecondary vocational education in the United States. The figure cannot be determined precisely but probably lies in the range of 5 to 10 percent of total expenditures. This estimate is based on figures supplied by the states to the federal government during the 1970s and early 1980s, which purported to show that federal spending amounted to about 10 percent of total spending for vocational education.[1] As federal spending for vocational education has remained relatively constant at about $1 billion in recent years, the effects of inflation have eroded the relative share of the federal dollars. If the earlier estimates of state and local spending for vocational education were at all accurate, today the federal share lies closer to 5 percent than to 10 percent.

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[1] See National Center for Education Statistics, *The Condition of Vocational Education*, Washington, D.C.: U.S. Government Printing Office, July 1981; Project Baseline, *Learning a Living Across the Nation*, Flagstaff, Arizona: Northern Arizona University, Vol. 1-4, 1971-1975.

But how accurate were those estimates? No one knows for certain, and the federal government ceased collecting data on state and local spending for vocational education when the Vocational Education Data System (VEDS) was suspended in December 1983.[2] The reason the estimates are suspect is twofold. First, most local school districts and postsecondary institutions do not maintain financial accounts by program. Secondary and postsecondary education agencies in this country can no more tell what is spent on vocational education than on math, science, or English. Second, assuming that accounts could be maintained programmatically, determining what should be counted would remain a problem. The programmatic boundaries of vocational education are somewhat fuzzy, making precise estimates of program spending impossible. Both of these issues are worth examining in more detail.

Local Budgeting and Accounting Practices

Budgeting and accounting procedures in secondary and postsecondary education in the United States typically classify spending by "object" of expenditure.[3] Objects of expenditure include salaries, benefits, supplies, equipment, travel, outside services, and so forth. Additionally, these general objects of expenditure are often further subdivided. For example, expenditures for the salaries of teachers, administrators, counselors, and "classified" staff may be accounted for separately. Furthermore, many systems also distinguish expenditures by "function;" that is, they separate expenditures for instruction from those for administration, support services (such as guidance and counseling), and operations and maintenance. Capital expenditures are also routinely distinguished from operating outlays.

For most elementary and secondary school districts, budgeting and accounting are limited to maintaining fiscal information by these objects of expenditure. With the exception of separate budgets for special education and extramural athletics, it is rare to find elementary and secondary districts maintaining any kind of budgets by program. Hence, with a few exceptions, most secondary districts cannot readily report expenditures for vocational education, nor do their accounting systems lend themselves to an easy study of the costs of vocational education.

At the postsecondary level, many institutions do maintain departmental budgets. At first blush, departmental accounting might appear to provide the means for estimating postsecondary expenditures for vocational education. This tactic, however, is thwarted by the second problem affecting attempts to isolate spending for vocational education: the fuzzy boundaries.

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[2] For a brief history of VEDS and some of the problems associated with collecting national data on vocational education, see E. Gareth Hoachlander, *National Data Needs for Vocational Education*, Berkeley, California: National Center for Research in Vocational Education, October 1989.

[3] See U.D. Department of Education, National Center for Education Statistics, *Financial Accounting: Classifications and Standard Terminology for Local and State School Systems, Handbook II, Revised*, Washington, D.C.: U.S. Government Printing Office, 1973.

Can Vocational Education be Clearly Identified?

Federal law defines vocational education as "organized educational programs offering a sequence of courses which are directly related to the preparation of individuals in paid and unpaid employment in current or emerging occupations requiring other than a baccalaureate or advanced degree."[4] The difficulty with defining vocational education in this fashion is that the same course can be taken by students preparing for occupations requiring other than a baccalaureate degree and by students preparing for an occupation requiring such a degree.

For example, accounting classes in community colleges are taken both by students intending to transfer to a 4-year college and major in business and by students who will complete their postsecondary education with an associate degree or leave before receiving any degree or certificate. Similar situations exist in a significant number of other courses offered in business, health, computer science, agriculture, and technical education. Consequently, even if departmental budgets exist, determining what expenditures might appropriately be classified as vocational education is not a straightforward task.

This kind of ambiguity is also present at the secondary level. Typing is usually offered by high school business departments and is taken by large numbers of students who will pursue baccalaureate and advanced degrees. The same is true of courses in introductory agriculture, computer programing, and electronics. Ironically, in full-time vocational high schools, where isolating spending for vocational education might seem the most straightforward, the problem is no simpler. For example, at Aviation High School in New York City, about half the graduating class will attend 4-year colleges and universities, and many will pursue advanced degrees in aeronautical engineering.

Can the National Assessment determine what vocational education costs in the United States? Without a great deal of very expensive data collection, the answer is certainly "no," or at least "not with any great precision." Accurately estimating expenditures for vocational education would first require some consistent, albeit rather arbitrary, procedures for defining vocational education. Second, these procedures would need to be applied to a sufficiently large number of secondary and postsecondary institutions to obtain reliable figures. Such a feat could be accomplished only with a well-trained cadre of field investigators able to find their way through local accounting systems to extract the information needed to establish program costs. Such an operation must entail on-site field work; it cannot be done through mail or telephone surveys.

In short, if accurately calculating the costs of vocational education is possible, it will be an expensive proposition. The National Assessment should have serious reservations about the wisdom of spending substantial resources on such an effort. We already know that federal spending is a small portion of total spending for vocational education, and this fact is not likely to change in the foreseeable future. Federal policy, therefore, must focus on a few well-articulated objectives. If federal resources are to have a clear impact, they must be targeted and not diffused so widely as to have no discernible effect. Moreover, because federal dollars operate at the margins of the enterprise, they are more likely to be effective when used as incentives to bring about particular changes rather than as the basis for broad legislative mandates for rapid, large-scale programmatic change. In other words, the policy implications are quite clear, even in the absence of a firm estimate of total spending for vocational education.

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[4] Carl D. Perkins Act of 1990, Section 521 (41).

Are there any "quick and dirty" alternatives? Perhaps. The Schools and Staffing Survey (SAS), conducted by the National Center for Education Statistics (NCES), collects data on teachers' salaries and teaching assignments. Therefore, SAS data can provide national estimates of expenditures on teachers' salaries for secondary vocational education, as well as on salaries for nonvocational education. The ratio of teachers' salaries for vocational education to teachers' salaries for nonvocational education, multiplied by total expenditures for secondary education, may be a reasonably good estimate of total secondary expenditures for vocational education.

It is true that some vocational education courses, especially in trade and industry, health, and some technical programs, use supplies and capital equipment more intensively than nonvocational courses. Hence, this approach to estimating vocational education expenditures may fall somewhat short. However, the error is not likely to be large. The major cost differences per student between vocational and nonvocational courses are most likely to be a function of smaller class size in vocational courses, and these differences will be accounted for in the SAS data.

To estimate postsecondary expenditures, a similar approach using the Postsecondary Faculty Survey, maintained by NCES, might work. Although it should be reasonably successful in estimating expenditures in public, 2-year institutions, the data on proprietary schools are not good, and estimating expenditures in this part of the postsecondary enterprise will remain problematic.

In summary, obtaining information on total expenditures for vocational education directly from secondary schools and postsecondary institutions is fraught with problems which are expensive and time consuming to overcome. Using national data on salaries of secondary teachers and postsecondary faculty may provide the easiest, cheapest means for obtaining a rough but useful estimate of total national spending for vocational education.

WHAT DO FEDERAL DOLLARS BUY?

The new federal legislation is very explicit about the uses of funds states receive under the basic grant. Section 235(a) states that each recipient shall use basic grant monies "to improve vocational education programs, with the full participation of individuals who are members of special populations." Furthermore, the act is quite clear about the kinds of activities constituting program improvement. These include:[5]

- upgrading curriculum
- purchasing equipment
- inservice training

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[5] Ibid, Sec. 235 (2)

- guidance and counseling
- remedial courses
- adaptation of equipment
- tech-prep education
- supplementary services
- a special populations coordinator
- apprenticeship programs
- economic development programs
- training adults and students in "all aspects of the industry"
- comprehensive mentor programs
- arrangements with private vocational training institutions, employers, labor organizations, and joint labor-management programs that can provide training at lower cost or training that is not available at public institutions

Short of using federal dollars to maintain routine programs or routinely replace supplies and equipment, there is very little on which federal money cannot be spent.

Tracing how federal money for vocational education is spent should not be very difficult. At the state level, good records are maintained on the distribution of federal dollars to local recipients. These records will usually be available from the state director for vocational education, although in some cases, to obtain the most recent data on distributions it may be necessary to obtain secondary and postsecondary allocations separately from the respective state agencies overseeing secondary and postsecondary vocational education. It will be easy to determine what secondary school districts and postsecondary institutions received Perkins funds. As the money will be targeted under the new legislation, sampling from a list of state-identified recipients will probably be more efficient than sampling from national listings of secondary and postsecondary agencies.

When a sample of recipients of federal vocational education funds has been established, obtaining more detailed information on what was done with federal dollars should also be relatively easy. Local recipients generally maintain good records on how federal dollars are spent. Business offices of secondary school districts and postsecondary institutions should have few problems supplying information on the kinds of activities for which federal vocational education dollars were used.

Although federal audit trails are usually quite clear, what federal dollars really buy can remain ambiguous. This ambiguity results from the substitutability of federal dollars for state and local dollars. For example, suppose a local school district desires to purchase new equipment and start a new program. In the absence of federal aid, the district purchases the equipment and forgoes the new program. With federal aid, it chooses to use the federal dollars to buy the equipment, because it is easier to maintain an audit trail on the equipment purchases, and it uses the state and local money it would have spent on equipment to start the new program. Although the books show that the federal money was used to purchase equipment, in fact, the federal dollars enabled initiation of the new program, because in the absence of federal aid, the equipment would have been purchased and the new program foregone.

Unfortunately, there is no satisfactory way to identify these substitution effects, and the National Assessment's efforts to identify what federal dollars buy will be forced to rely simply on what the records show. As long as one recognizes that these records may not tell the complete story, the resulting picture will be about as accurate as possible.

ISOLATING THE EFFECTS OF FEDERAL SPENDING FOR VOCATIONAL EDUCATION

In addition to knowing what federal dollars buy, ideally Congress would like to know what impact these expenditures have on vocational education. What evidence is there that federal spending per se resulted in the improvement of vocational education programs? Unequivocally answering this question will probably prove impossible, and the National Assessment should therefore devote its efforts to describing changes in the vocational education enterprise as a whole, rather than attempting to isolate the impact of federal spending alone.

There are several reasons for focusing on the larger picture. First, because federal funds do represent such a small share of total expenditures for vocational education, Congress needs to know about the condition of the entire enterprise if it is to make sensible decisions regarding where limited federal resources should be concentrated. Second, even if federal policy objectives are achieved, these outcomes may not be a direct result of federal spending. Again, given the relatively small share federal dollars represent, it is unlikely that federal objectives that are totally incongruent with state and local objectives will be achieved. Federal policy can lead and can provide additional resources to hasten changes that states and local agencies are also pursuing. However, it is unlikely that federal policy and federal spending can produce proposed changes if those changes are universally resisted by the field.

One should not, however, underestimate the influence of the federal dollars for vocational education. While it is true that these resources represent less than 10 percent (maybe even as little as 5 percent) of total spending for vocational education, they nevertheless represent close to 100 percent of the *discretionary* funds local secondary and postsecondary agencies have to spend on vocational education, especially given the increasingly tight fiscal constraints in many states. Hence, federal monies are probably the major source of funds for innovations and changes that require new resources. To the extent such innovations and changes can be documented, these would seem to be legitimately described as "consequences" of federal expenditures for vocational education.

CONCLUSION

In summary, the National Assessment should be satisfied with rough estimates of total spending for secondary and postsecondary vocational education and should avoid a costly study to calculate this total more precisely. No matter how precisely this figure is computed, federal dollars as a percentage of the total will represent a small figure. Attempts to describe what federal dollars buy for vocational education should not be very difficult, as long as one recognizes that there are potential substitution effects that may confound these findings. However, because federal dollars can no longer be used for routine program maintenance and because federal dollars probably represent the bulk of discretionary money available locally, these substitution effects may be negligible. Consequently, what was bought with federal money should represent a fairly accurate picture of the impact of federal expenditures for vocational education.

Return of the Debate: Can Federal Policy Improve Vocational Education for Special Populations?

Lana D. Muraskin*

For special populations, the Perkins Act of 1990 is both a culmination of, and a departure from, previous federal policy. The Act reiterates and underscores congressional concern that federal vocational education policy be a means to improve the quality of vocational education for special needs groups. At the same time, the Act expands the opportunities for reform of vocational education in ways that could divert attention from the needs of disadvantaged and handicapped students.[1] There is understandable uneasiness among special population groups about the implementation of several new or changed provisions. Studying the impact of these provisions on special populations will be a major challenge facing the new National Assessment. This brief paper spells out some of the issues the assessment may wish to consider.

SPECIAL POPULATIONS UNDER THE 1984 PERKINS ACT

The 1984 Perkins Act was the culmination of what was (with the benefit of hindsight) a two-decade long movement to redirect federal vocational policy. The 1963 Vocational Education Act first authorized the use of funds for persons with "academic, socioeconomic, or other handicaps that prevent them from succeeding in the regular vocational education program" (as well as adults needing training). The 1968 Amendments introduced the idea of funds specifically earmarked or "set aside" for special populations. These earmarked funds grew considerably over time, and in the 1984 Perkins Act, they accounted for over half of the basic grant to states. In addition, the 1984 Act prescribed a formula for the within-state distribution of set-asides for disadvantaged and handicapped students, added an "equal access" provision, and created a limited service entitlement, identifying certain "required" services for disadvantaged and handicapped secondary students enrolled in vocational education.

The 1984 Perkins Act was hailed by groups representing a wide spectrum of special population groups. However, it came during a period in which prescriptive categorical programs were falling from national favor, and therefore it also seemed to be a throwback to the previous decade (if not earlier). Perhaps not surprisingly, some of its special population provisions hardly got off the ground. The provision guaranteeing all students equal access to vocational programs and services was defined in the regulations to apply only to those programs receiving federal support. The means to implement the law's entitlement provisions were never spelled out (the regulations simply restated the law) and the scope of these provisions remained murky. A small growth industry developed in vocational assessments for disadvantaged and handicapped students, the one entitlement the law clearly required. However, many practitioners remained unclear about how to use assessment findings to improve students' education.

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[1] The Perkins Act refers to handicapped students, hence this paper also uses that terminology.

The Act's provision for dollar set-asides for special populations received the greatest attention. Disadvantaged and handicapped students could lay claim to almost a third of the basic grant funds not retained at the state level. Further, the law specified that the funds could be used only to pay for up to one-half of the "excess costs" of services to students who were disadvantaged or handicapped and were enrolled in vocational education. Set-asides were added for displaced homemakers and for persons in nontraditional vocational offerings for their sex. These provisions were Congress' attempt to target resources to students in need; that is, groups held to be underserved in vocational education or to be enrolled in poorer quality programs.

The story of what happened to the set-aside funds is too long to discuss in detail here.[2] Suffice it to say that funds for disadvantaged and handicapped students for the most part were expended nominally to provide instructional and support services for the intended groups. It was almost impossible to know with any assurance whether the funds resulted in more or better vocational services or opportunities than would have occurred in their absence. Funds distributed under sex equity and single parent set-asides appeared likely to be used for activities that probably would not have occurred in their absence. It was almost impossible to account for the uses of funds under the adult set-aside at the local level.

All of these outcomes were overshadowed by two other findings about funds expenditures that proved influential with Congress. The first was that the intrastate formula that distributed disadvantaged and handicapped set-asides did not appear to increase funds to districts with high concentrations of family poverty. The second was the finding that the median grant to a regular school district in 1987-88 was only $7,900. The median disadvantaged and handicapped set-aside grants were $4,000 and $3,000 respectively. Perhaps more than any other, these findings spurred congressional action aimed at new and more stringent targeting of funds.

SPECIAL POPULATIONS UNDER THE 1990 PERKINS ACT

As noted previously, some of the important changes enacted in the 1990 Act follow in the direction established and maintained since 1963. Reacting to the inability of previous legislation to target federal resources effectively on districts and institutions with disadvantaged students, Congress has now made the number of disadvantaged and handicapped students *the* major determinant of the allocation of three-fourths of the basic grant funds. Of funds for secondary education, 70 percent are to be distributed on the basis of Chapter 1 eligibility, 20 percent on the basis of the number of handicapped students with IEP's, and 10 percent according to enrollments.

At the postsecondary level, funds are based on the institution's percentage of statewide Pell Grant and BIA funds recipients who are enrolled in vocational programs. Further, within recipient districts, federal funds are to be concentrated in schools with high proportions of disadvantaged and handicapped individuals. Minimum district award levels at the secondary level are set at $15,000, and minimum institutional awards at the postsecondary level at $50,000. Districts may form consortia to meet the $15,000 minimum grant requirement.

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[2] Those readers who wish to explore this issue are directed to GAO testimony by William J. Gainer before the House of Representatives Committee on Education and Labor, March 7, 1989, and to Lana D. Muraskin, *The Implementation of the Perkins Act,* Volume II of the final report of the National Assessment of Vocational Education (Washington, DC: U.S. Department of Education) 1989.

In addition, the set-asides for single parents/displaced homemakers and persons enrolled in nontraditional programs for their sex are transformed into a state-level discretionary grants program with all awards to be made competitively. Together, the sex equity and single parent/displaced homemaker grant programs account for 10.5 percent of the basic grant funds, similar to the amounts set aside for these groups under the 1984 Act. Finally, the 1990 Act has strengthened the equal access provision, making it even clearer that it applies to all vocational programs, not just those with federal support.

Although it provides for greater targeting of funds, the 1990 Act also includes a departure from previous federal policy for special populations in vocational education. At the same time it has redistributed funds in a more focused manner, Congress has become less concerned with tracing federal funds through the myriad levels of government to specific individuals. Instead, it has become more concerned with using federal resources to spur institutional and district reform in vocational education. Within that broad goal, federal funds are intended to help districts and postsecondary institutions with concentrations of disadvantaged and handicapped students bring those reforms to fruition.

As a result of this concern for reform in vocational education, the Act also includes changes that provide more local discretion (or flexibility) in the uses of federal resources. First, the 1990 Act eliminates the set-asides and the excess cost provision. These changes should please every state or local official who complained about the paperwork burden of these provisions. However, the changes also mean that schools and districts are under no obligation to demonstrate that they provide more vocational services to specific disadvantaged and handicapped students with Perkins funds than are provided to other students. The Act does contain a comparability provision of sorts. It is enunciated in the form of an assurance that state and local funds will be used in the schools of each local education agency (LEA) receiving federal funds to "...provide services which, taken as a whole, are at least comparable to services being provided in schools in such agency which are not receiving federal funds."

A second change is that states must make the division of funds between secondary and postsecondary levels explicit, and must provide a rationale for the split. But in cases where a state puts 15 percent or less of its basic grant funds into one of those two sectors, it does not have to use the specific "disadvantagement" factors cited earlier to distribute funds to the sector with fewer resources. This means that if most of the funds go to postsecondary education, funds that flow to secondary education are not subject to the intrastate distribution rules.

In a third change, there is general language but no specific guidelines on intradistrict funds distribution. Districts and postsecondary institutions are urged to put funds into "sites or programs" with concentrations of disadvantaged students. They are also urged to concentrate funds in a limited number of sites, so that programs are of "sufficient size, scope, and quality to be effective." The law provides no minimum school-level grants, however, and it remains to be seen how the regulations will define the school/program concentration and "sufficient size, scope, and quality" provisions.

Most importantly, districts and postsecondary institutions do not have to use the federal funds to support education of disadvantaged or handicapped persons. Once certain distributional requirements are met, administrators and instructors may use the local funds for any activity they see fit. It should be noted that though the 1984 Act specified in detail which students were ***eligible*** for support, a district could theoretically concentrate all funds under a set-aside on one eligible student if it had a notion to do so. Nonetheless, this change more than any other has many advocates for special populations worried that disadvantaged and handicapped students will be neglected. The 1990 Act clearly tries to shift decisionmaking about the expenditure of federal funds to the district and school levels and to give officials at those levels far more flexibility than they had heretofore. Many are concerned about what that flexibility will mean in practice.

If there are "checks and balances" in the new law (i.e., ways of keeping expenditures focused on those with special needs), they occur because the fiscal provisions are not meant to stand alone. There are potentially sweeping provisions in the new law that are not fiscal but rather seek to make vocational education accountable for its expenditures through its results. The greater flexibility in funds allocation is balanced by state and local accountability for student performance.

The 1990 Act calls upon states and localities to create and implement standards and measures of performance for vocational education, with special attention to the performance of disadvantaged and handicapped students. Standards and measures are to be developed in areas including academic and vocational skill competency, school retention and completion, additional training, and job placement. Further, the standards and measures system must specifically address the performance of disadvantaged and handicapped students, and must provide incentives or adjustments to encourage services to special populations and the means for integrating vocational education with IEPs. Localities and, ultimately, states are to take action when local performance fails to improve. Thus, the flexibility in funds expenditure is to be balanced by a system of accountability for results.

THE STATUS OF DISADVANTAGED AND HANDICAPPED STUDENTS IN VOCATIONAL EDUCATION

The changes aimed at greater outcome accountability are being enacted at an opportune time. Studies conducted for the previous national assessment found changes in vocational enrollments that called into question some of the conventional wisdom about the participation of special populations and demonstrated the need for greater attention to their opportunities and their performance.

Studies of course-taking patterns over two decades found that while all students take considerable amounts of vocational education in high school, disadvantaged and handicapped students take considerably more than other students. In the class of 1987, the average student took about 18 percent of his or her high school coursework in vocational education.[3] In that same year, the average student with an IEP took 27 percent of his or her credits in vocational education. Contrary to popular belief, however, most handicapped students were not preparing for work in low-level service jobs.

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[3] The discussion cited in this section is derived from Becky John Hayward and John G. Wirt, *Handicapped and Disadvantaged Students: Access to Quality Vocational Education*, Volume V of the final report of the National Assessment of Vocational Education (Washington, D.C.: U.S. Department of Education) 1989.

With respect to the relationship between disadvantage and vocational coursetaking, the typical student in the class of 1987 who received "mostly A's" in high school took less than three credits in vocational education, while the typical below-C graduate took almost five credits.[4] Further, the vocational coursetaking of mostly-A students fell a full credit between the classes of 1982 and 1987, while the credits of below-C students remained virtually unchanged. And while they took more vocational education, these lower-performing students took considerably less academic instruction—an average of about 13 credits over 4 years for below-C students, compared with about 19 credits for mostly-A students in the class of 1987.

Though they took more vocational education, disadvantaged students were more likely to be concentrated in schools with fewer vocational opportunities.[5] In a separate analysis, schools with higher concentrations of economically disadvantaged students were less likely than other schools to provide opportunities for students to attend specialized vocational facilities such as area schools and less likely to offer cooperative education programs that combine instruction with work experience. Perhaps most importantly, students in these schools had access to the most limited variety of vocational course offerings—about 40 percent fewer choices than schools with the most advantaged populations.

These data show that special populations appeared not to be underserved by vocational education, but rather to be major users of secondary vocational services. In fact, the data hint at a shift toward a secondary vocational enterprise dominated by special populations, although data from additional graduating classes will be needed to confirm that such a trend exists. At the same time, the vocational options available to students in schools with high concentrations of disadvantaged students remained the most limited.

These data also confirm that the plan passed by Congress makes intuitive sense. Sufficiently large grants targeted to districts and schools with high concentrations of disadvantaged students but spent to improve the overall programs in those schools would be a reasonable way to implement the federal agenda and address real problems in vocational education. With a system of standards and measures that focuses on the performance of special populations in vocational education and can trigger action when districts or institutions fail to meet their goals, the 1990 Act changes the terms of local and state accountability. Accountability moves from being input-oriented; that is, demonstrating that a particular eligible student gets a specific supplementary service (no matter how marginal), to being output-oriented; that is, demonstrating the educational and job outcomes of vocational education.

STUDYING THE IMPLEMENTATION AND IMPACT OF THE NEW PROVISIONS

It is a nice plan, but will it work? There are a variety of issues the new National Assessment will need to address dobegin to answer that question. The study can examine the ways in which the provisions are defined in the regulations and implemented. It can also look at the impact of implementation on the distribution of federal support and on the services provided to special populations. However, given the time frame of the assessment, it will be almost impossible to examine the ultimate impact—the educational and employment outcomes for special population students. This set of questions will have to be tackled in later years. Some of the items for possible inclusion in the National Assessment study design are outlined below.

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[4] John Tuma et al., *Enrollment Trends in Vocational and Academic Education in American Public High Schools* (Berkeley, Calif.: MRP Associates) 1989.

[5] Hayward and Wirt, op cit.

Federal Implementation: Regulations and Other Guidance

In the last Perkins Act, the regulatory process played a major role in determining the course of program implementation. Two items noted previously were of particular relevance to special populations: the equal access provision of the Act and the various entitlements or required services for disadvantaged and handicapped students. Not only were the entitlements simply restated in the regulations without explanation of their scope, but also the regulations never clarified whether or not districts had to provide services beyond those that could be financed with federal funds.

In the current legislation, regulatory explanations of several items will be particularly important for special populations. The assessment will want to examine how the regulations:

- Interpret the mechanisms for exemptions to the Pell Grant/BIA funds distribution procedure for intrastate distribution of funds to postsecondary institutions (and examine the actual waivers granted to states for the use of other distribution mechanisms).

- Interpret the within-district allocation provisions—especially those establishing "site and program" priorities and elaborating the comparability provisions. It is particularly unclear how the comparability provision should be interpreted at the postsecondary level.

- Elaborate the assurances with respect to required services for handicapped, disadvantaged, and LEP students. As mentioned previously, these issues were not defined in regulations that accompanied the 1984 Act and now that the required services are in the form of an assurance, their status is even murkier.

- Establish the obligations of postsecondary institutions with regard to the assurance on required services. These institutions were explicitly exempted from the service requirement in the previous legislation but do not appear to be exempted in the 1990 Act.

- Enable states to tell if a program is of "sufficient size, scope, and quality" to warrant federal support. Clearly, the interpretation of this provision will be critical to ensuring that sufficient funds are directed to reform of vocational education. Interpretation may be most critical in those cases where districts form consortia to obtain the minimum $15,000 grant award.

- Describe the methods for funds distribution to area schools and the methods for states to determine when these institutions are serving large concentrations of handicapped and disadvantaged students. Data from the previous national assessment suggested that disadvantaged and handicapped students take more of their vocational education in area schools than other students, but all students take the bulk of their vocational education in comprehensive high schools.

The research to examine these issues is typically analysis of the law and regulations. Given use of the negotiated rulemaking process this time, an analysis of that process, its role, and its impact might also be warranted. Also, the federal government is charged with providing guidance to states in development of performance standards and measures, as well as with administering a variety of discretionary programs with great potential to affect disadvantaged and handicapped students.

State Implementation

Even before regulations are in place, states will begin to administer the Act. For example, they must write state plans, establish committees to guide development of the performance standards and measures and begin the development process, and issue guidance to localities on applications for support. In a broader sense, they send out signals to localities about how to interpret what they read in the Act and regulations and how to implement programs that will pass muster.

State officials can make or break the reform elements in any legislation, by embracing the spirit of the Act or by finding ways to maneuver around it. As a result, it is worth paying particular attention to state implementation. In tracking state implementation, special population issues to describe and assess include:

- State rationales for distribution of funds among secondary and postsecondary eligible recipients. The last national assessment documented the divisions of funds, but now it is important to understand not only how those distributions have changed over time, but also why they occur as they do and the implications for improving vocational education for special populations.

- The range of performance standards and indicators and appropriateness of systems that are developed for special populations. In addition, to which students do the standards and measures apply (i.e., all students or just those deemed "vocational")?

- The operation and outcomes of competitions in areas of state discretion with respect to special populations (single parents/displaced homemakers, sex equity, tech-prep, CBO's). In particular, what methods do states establish to ensure funds to places with concentrations of disadvantaged students? One finding from the previous national assessment was that single-parent/displaced homemaker set-aside funds under the 1984 Act were not well distributed with respect to community disadvantage. New federal rules call for assurance that distribution will go to "individuals with the greatest financial need."

- Redistribution of unspent allocations. This is also an area in which to pay attention to interpretation through regulation as well as to implementation. Are the mechanisms used to distribute these funds in keeping with the overall effort to direct resources to districts and schools with special populations?

- State evaluations and initiatives in districts that fail to meet performance standards. Although this system will not be in place for a while, it will be important to see what rules states establish for helping recipients who fail to meet the performance goals for all students and for special populations.

- Carrying out all federal requirements on special populations when eligible recipients do not report to the agency administering the federal funds. For example, when the sole state agency administers secondary education, what guidance is provided to postsecondary institutions with respect to the performance standards and measures?

One way to address most of these issues is by carefully tracking implementation of the program in a selected number of states. It would be useful to focus on a limited number of issues and to return to state agencies several times over the course of the implementation period. In carrying out this analysis, it is critical to examine implementation of the federal program in the context of ongoing vocational and academic education reform in the state.

Local Implementation

Studies by the previous national assessment and other sources identified several problems for special populations the new legislation has attempted to address. It will be particularly important to pay attention to the effects of the new legislation with respect to the following concerns:

Bifurcation of the federal resources. The divisions in the basic grant under the 1984 Act led to a tendency for local officials to view their federal resources as two pots of money—a pot for special populations and a pot for program improvement. As a consequence, the two concerns were rarely joined. Now that the division between special population funds and program improvement funds has been eliminated, are funds being used for improvement of programs with concentrations of special populations?

Narrow service provision for disadvantaged and handicapped students. Because of the combination of match, excess cost, nonsupplanting, and required service provisions under the 1984 Act, special population funds were sometimes spent on services that were marginal to vocational instruction and/or of limited value to students (such as assessments that were not used to place students in programs, or services based solely on a secondary student's economic disadvantage). Will the elimination of the excess cost provision and the greater flexibility the Act provides for the uses of funds at the local level mean that funds are more likely to be spent in ways that improve vocational instruction for disadvantaged and handicapped students?

Use of program improvement funds for equipment purchases. To what extent does the direction of resources to districts and schools with concentrations of disadvantaged and handicapped students also lead to differences in goods and services that are purchased? Does equipment continue to play the same prominent role in expenditures as in the past, or are there shifts to other priorities?

Extremely small grant sizes in regular secondary school districts. Does the increase in grant sizes to school districts in combination with the within-district concentration factors help schools and districts undertake reforms of broad vocational programs rather than buying small increments of supplementary services that lack rationale or focus?

New issues. In addition to the issues raised in previous research, provisions new to the 1990 Act raise additional concerns. From the standpoint of funds distribution, the most obvious question is whether the new formulas result in greater resources to districts and institutions with the highest concentrations of disadvantaged and handicapped students. While studying the distribution of federal funds alone says little or nothing about overall expenditures for vocational education, it is clear that the Congress, practitioners, and advocates want an answer to this question. The author's recommendation is to repeat the survey of school districts and postsecondary institutions carried out for the previous assessment. The sampling frame of the previous study will also allow an examination of how the new Act may change the distribution of funds to area vocational districts (although poverty indicators are not available for those districts from Census data that are usually used to analyze fund-distribution information).

Other funds questions triggered by new provisions include the following:

- What problems arise when schools that received few or no federal funds in the past become major recipients?
- What problems arise for recipients whose grants are substantially reduced (especially in the current climate of fiscal retrenchment)?
- Can the comparability provision be implemented effectively (since most schools have no idea how much they spend on vocational education)?
- Who participates in development of local performance standards and indicators and what measures and standards are adopted?
- Does any district fail to meet its performance goals? If so, what happens? Does the state become involved in joint planning as prescribed by law?
- How does any of the ambitious reform and assessment agenda operate at the postsecondary level, particularly in institutions that are not exclusively vocational, such as community colleges? To what programs or students does it extend?

These questions can be answered by a combination of survey and case studies.

CONCLUSION

When field work was conducted for the previous national assessment, vocational educators sometimes described the federal program as two programs—"theirs and ours." Many state and local officials viewed the expenditure of funds on disadvantaged and handicapped students as the quid pro quo for federal program improvement funds (sometimes referred to as "federal equipment money"). It would be encouraging to hear that a school used the less encumbered funds of the 1990 Act to link academic and vocational instruction in a novel manner or that it created a new program to meet a new employment demand in the community. If this Act helps to bridge the gaps between vocational expenditures for disadvantaged or handicapped students and those for everyone else, it will have gone a long way in improving the opportunities for special populations in training for work.

The author suggests a simple, intermediate indicator of local success in program implementation: Do vocational educators change the ways they describe their expenditures under the federal program or their beliefs about what the Act is designed to accomplish?

Design for the Congressionally Mandated Study of the Formula for Distributing Federal Vocational Education Funds to the States

Stephen M. Barro*

Federal vocational education funds under the Perkins Act are distributed among the states according to a statutory federal formula, based primarily on each state's population and per capita income. This formula has become something of a historical monument. Over the years, most other key provisions of the federal vocational education program have changed drastically. The federal government's goals in vocational education have evolved; the intended beneficiaries of federal aid and the intended uses of funds have been redefined; and last year, the rules for distributing federal funds *within* states were completely rewritten. But the interstate fund allocation formula today, under the 1990 Perkins Act, remains essentially the same as it was in 1963, when the Vocational Education Act first became law (see note 1).**

At last, however, Congress may be ready to re-examine the interstate formula as well. A separate section of the statutory mandate for a new National Assessment of Vocational Education—P.L. 101-392, Section 403(d)—calls for a "study of the distribution of federal vocational education funds to the States." The statute goes into some detail, stipulating that the required study is to include 1) an examination of the distributional effects of the existing fund allocation formula and its component factors, 2) analyses of the effects of incorporating into the formula additional or alternative factors, such as state fiscal capacity and fiscal effort, poverty, and educational achievement, and 3) an exploration of fund distribution methods specifically designed to direct funds to the economically disadvantaged and other special need groups who are the target populations of the Act. This paper reviews the problems and issues that will need to be addressed in this formula study and offers a general outline of how to proceed.

General Fund Allocation Issues

The issues for this federal fund distribution study can be framed at two levels: first, there are generic issues that would arise in evaluating the distribution of any type of federal aid or any federal fund allocation formula or process; second, there are more specific issues pertaining to the distribution of federal vocational education aid under the Perkins Act. Let us consider the generic issues first.

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**To avoid interruption of the textual flow, author's notes are at the end of this paper.

The broad questions one would pose in assessing any federal fund method (either actual or proposed) include the following:

1. Does the method distribute funds in a manner consonant with the program's goals? Or, more specifically, does it distribute funds in a reasonable relationship to the distribution of the needs or problems federal aid is intended to address?

2. Is the fund distribution method equitable? Does it treat places with similar needs equally, and does it take due account of relevant differences in circumstances (educational, demographic, and fiscal) among the aid recipients?

3. Is the method technically sound? For instance, do the variables in fund allocation formulas represent what they are supposed to represent, are the data reliable and reasonably timely, and are the elements combined in an appropriate mathematical form?

4. Does the distribution method have important side effects? In particular, does it create incentives to allocate or use funds or resources in certain ways, and if so, are the incentives positively or negatively related to the program's goals?

These generic questions can be translated into more specific questions about the vocational education formula and linked to the specific topics, options, and alternatives mentioned in Section 403(d) of the Act. First, however, it seems useful to set the context by explaining how the existing interstate fund allocation formula works.

The Existing Formula

Under the present formula, federal funds, now amounting to nearly one billion dollars per year (FY 1991), are given to states mainly according to two factors—a population factor and an income-based adjustment factor (see note 2).

The population factor is actually a weighted sum of state populations in three age cohorts: 15-19, 20-24, and 25-65 (see note 3). It is generally interpreted as a rough indicator of the states' relative needs for vocational education services. Other things being equal (and apart from the effects of certain constraints, to be discussed later), under the formula, each state's share of funds is proportional to its weighted count of persons in the specified age brackets. Obviously, this weighted population count is related in only the most general sense to a state's need or demand for vocational education or actual level of vocational education services—a point to be pursued further below.

The formula's income-based adjustment factor is designed so that lower-income states get more aid and higher-income states get less aid relative to their populations. This adjustment factor is calculated according to the equation

$$\text{Income factor} = (1 - .5 \times \text{PCI}/\text{PCIUS}),$$

where PCI is state per capita personal income and PCIUS is the average per capita personal income in the United States. The calculation is also subject to the proviso that no state's income factor may fall below 0.4 or exceed 0.6 (see note 4). This factor is applied multiplicatively to the previously described population factor, and funds are then distributed among the states in proportion to the resulting mathematical products. The effect of the upper and lower bounds on the income factor is to allow aid amounts to vary relative to population by a ratio of no more than 1.5 to one; that is, the lowest-income state gets 50 percent more aid relative to population than the highest-income state. This income factor is generally understood to be an adjustment for differences in state fiscal capacity. States with the least ability to pay, as measured by their residents' average per capita income, get more aid than states with greater ability to pay.

Anyone familiar with state school finance systems will recognize the mathematical form of the federal vocational education formula immediately, because it resembles closely the state aid allocation formulas some states use to compensate for differences in the local property tax base (fiscal capacity) among school districts (see note 5). Also, the vocational education formula has important similarities to the formulas used to determine the federal share of funding for such programs as Medicaid and Aid to Families with Dependent Children (AFDC) (see note 6). In other words, the present vocational education formula incorporates a fairly standard method of adjusting for differences in per capita income among grantees.

Aid allocations calculated according to the aforesaid formula are subject to two constraints. One is known as the "small state" provision. It guarantees each state no less than 1/2 of 1 percent of the total funds available (subject to certain qualifications), even if the state would be entitled to only a fraction of that amount based on its population and per capita income (see note 7). The second constraint is a "hold harmless" provision, guaranteeing each state no less aid than it received in an earlier fiscal year (specifically, FY 1985) (see note 8).

Specific Issues and Alternatives

With the foregoing description as background, we can turn to the specific formula design issues that need to be addressed and the types of alternatives that need to be examined in connection with the vocational education formula. The easiest way to present these issues is to focus, one by one, on the different types of factors that either appear in the present formula or would be added by various proposals to make the formula more equitable or improve it in other respects. This factor-by-factor approach fits in well with the Congressional mandate, which consists in large part of an enumeration of factors that, in the view of the drafters of Section 403(d), deserve to be considered. Conventionally, the factors used in fund allocation formulas are classified as indicators of *need, fiscal capacity, fiscal effort, and cost.* The following four sections of the paper correspond to these categories. A separate section deals with formula constraints and other aspects of formula mathematics.

Indicators of Need

The basic issues that need to be addressed with respect to the need indicator in the interstate fund allocation formula are the following:

- Does the present formula—specifically, its weighted-population factor—take account adequately of interstate variations in needs for the vocational education services to be aided under the Act?

- In particular, is the formula satisfactory for allocating aid to the economically disadvantaged and the other special populations who are designated target groups under the Act?

- If the answer to either of the above is negative, what modified or alternative need indicator(s) might improve the match between funding and needs?

The first two questions almost answer themselves. Even before federal goals in vocational education were modified to emphasize services to members of particular special need groups, the weighted-population factor was a questionable proxy for needs or demands for vocational education services. The assumption implicit in reliance on such a factor—that about the same amount of vocational education is needed or wanted per capita in each state—is hard to defend. Consequently, there was reason even before the recent changes in the Act to ask whether a better need indicator could be developed. Now, basing federal fund allocations on general population variables has become even more incongruous because of the heavy emphasis placed on providing vocational education services to disadvantaged, handicapped, and other special need students, not only under the 1990 Perkins Act but also under the 1984 Act.

Considering also that states are now required under the 1990 Act to distribute federal funds internally according to numbers of poor and handicapped pupils served by each local education agency (LEA), and even to take concentrations of the disadvantaged into account in allocating to the building and program level, it seems inconsistent to ignore the distributions of these same target populations in distributing funds among the states (see note 9). The neglect of these special populations in the present formula is presumably what led Congress to call for an inquiry into "the appropriate distribution mechanism to serve the target population of this Act" (Sec. 403(d)(1)(C)) and "methods of targeting funds to individuals who are members of special populations, particularly individuals who are economically disadvantaged...." (Sec. 403(d)(1)(D)).

Adding indicators of the prevalence of disadvantaged and other special need pupils to the formula is clearly feasible. One approach is ready-made: The method Congress prescribed last year for distributing vocational education funds within states could be applied to the interstate distribution as well (see note 9). Another possibility is to replicate the approach taken in distributing aid to states under the Department of Education's Drug-Free Schools and Mathematics and Science grants programs, i.e., allocating a portion of the aid in proportion to each state's allocation of Chapter 1 grants for the disadvantaged instead of according to a population factor. A third option is to emulate the pupil-weighing schemes some states have developed to take account of unequal concentrations of poor, handicapped, and other special need pupils in distributing state education aid to local school districts (see note 10). Such options will need to be considered in the study.

Apart from the issue of special populations, it would arguably be desirable to replace the present population factor with a variable that relates more directly to vocational education. But here, unfortunately, we run into a long-standing barrier that impedes improvement not only of fund distribution methods but also of many other aspects of vocational education policy: *We have no data on the magnitude of the vocational enterprise in the states.* No usable state-by-state information is now collected on vocational enrollment, vocational coursetaking, or spending on vocational education services. Consequently, although the idea of allocating funds according to such measures merits serious consideration, little can be done to implement or evaluate it without first making progress on the data front. The National Assessment probably lacks the capacity to correct these major data deficiencies, but any steps it could take toward documenting the data gaps and developing methods to fill them would be a major contribution.

Fiscal Capacity Indicators

The vocational education program is unique among major federal elementary-secondary education aid programs in that it distributes aid according to a formula that takes state fiscal capacity (represented by per capita income) into account (see note 11). That distinction raises what are surely the most basic issues concerning the present fiscal capacity adjustment. Why is it present and is its presence justified, considering that Congress has not seen fit to make similar adjustments in allocating other education grants? These questions must be addressed at a somewhat philosophical level, as they touch on such fundamentals as what the federal interest is, or should be, in school finance equity and, insofar as there is such an interest, what specific equity principles should be applied. The point of having a fiscal capacity adjustment in the vocational education aid formula is, after all, to offset differences in the states' abilities to support vocational education programs on their own. Defining specifically what the federal fiscal equalization goal is and how far it extends is logically prerequisite to evaluating any particular method of carrying it out.

Assuming that the appropriateness of pursuing fiscal equity in vocational education is affirmed, questions then arise concerning the manner in which, and the degree to which, fiscal capacity should be taken into account in distributing federal vocational education funds:

- Should per capita income be retained as the fiscal capacity indicator, or should it be replaced with an alternative measure of fiscal capacity?
- Should the mathematical form of the adjustment factor be kept as is, or is some other adjustment method more appropriate?
- Should the effect of the fiscal capacity adjustment be strengthened or weakened, and if so, to what degree?

Regarding the choice of a fiscal capacity indicator, specialists in public finance have long recognized that per capita income is not a very good measure of fiscal capacity and have come up with several alternatives. These include, for example, gross state product (GSP); a measure known as Total Taxable Resources (TTR), which is a composite of GSP and income; and the Representative Tax System (RTS) and Representative Revenue System (RRS) indices, produced by the Advisory Commission on Intergovernmental Relations (ACIR). In addition, regardless of which basic measure is selected, the issue arises of whether the fiscal capacity factor in an education aid formula should be expressed in per capita terms, as at present, or restated in terms of capacity per elementary-secondary pupil. The Congressional drafters of the study mandate seem to be quite aware of and interested in these options, as capacity measures are mentioned several times. Note especially the reference in the statute to a specific alternative, gross state product per school-aged child. There is no question that the study will have to include an assessment of alternative fiscal capacity measures and an analysis of the distributional effects of substituting them for the present per capita income factor.

It will also be important to consider alternatives involving changes in the parameter values or in the mathematical form of the adjustment for differences in state fiscal capacity. The most important parameter changes are those that would replace the value of 0.5 in the expression 1 - 0.5 x

PCI/PCIUS with some lower or higher value. This parameter controls the degree to which the aid distribution tilts in favor of states with lower per capita incomes. Raising it would strengthen, and lowering it would reduce, the redistributive effect of the formula. Possible changes in formula mathematics include replacing the present adjustment factor with a simple inverse income factor or replacing the formula PCI/PCIUS with the formula (PCI/PCIUS) squared, as in the AFDC and Medicaid formulas (see note 6). The effects of such changes, made individually and in various combinations, will need to be determined.

Fiscal Effort Indicators

A state's fiscal effort to support a specified program or activity is defined as the ratio of the state's own financial support for the activity to the state's fiscal capacity. (The term "state's own financial support" refers, in this context, to state-local "own-source" revenue devoted to the activity in question, i.e., total state and local expenditure for the activity, less federal aid.) For example, if fiscal capacity were measured by per capita personal income, then a state's effort to support elementary-secondary education in general would be given by

$$\text{Effort} = \frac{\text{per capita own-source revenue for education,}}{\text{per capita personal income}}$$

where per capita "own source" revenue for education is defined as total state-local outlay for elementary and secondary education *net* of federal elementary-secondary education aid. Similarly, one could compute fiscal effort specifically to support *vocational* education by replacing the numerator in the foregoing ratio with per capita own-source revenue for vocational education (i.e., total state-local vocational education spending less federal vocational education aid). There are as many alternative ways of quantifying either type of fiscal effort as there are indicators of fiscal capacity. For example, fiscal effort might be measured relative to GSP or relative to the RTS fiscal capacity index, as well as relative to personal income.

A fiscal effort factor is supposed to represent the degree to which the state draws on its own resources, or the financial "sacrifice" the state makes, to support the program or activity in question. The usually cited reasons for wanting to link federal aid allocations to fiscal effort are to "reward" states for spending their own money on activities of federal interest or to create fiscal incentives for states to allocate more of their own funds to the designated programs or services. No fiscal effort factor is included in the present vocational education formula (nor, incidentally, in the formulas for allocating aid under other major federal elementary-secondary grant programs), but the Congressional mandate says explicitly that such factors should be considered (see note 12). The issues that need to be addressed are the following:

- Should state fiscal effort be taken into account in allocating federal vocational education funds, and if so, should states be rewarded for effort to support education in general or vocational education in particular?
- If effort is to be taken into account in distributing vocational education aid, how should fiscal effort be measured, and how should a fiscal effort factor be incorporated into the fund distribution formula?

Whether fiscal effort should be rewarded is essentially a normative question rather than an issue that can be settled by research. What research can do is make clear the implications of rewarding effort, and of rewarding effort in various ways. In particular, it will be important in the study 1) to evaluate any incentive effects that might be created and 2) to show how the equity of the interstate distribution of educational resources would be affected, for better or worse, by inserting effort factors into the Perkins Act fund allocation formula.

The distinction between linking federal aid to effort to fund elementary-secondary education generally and linking it to effort to support vocational education specifically is crucial in evaluating the reward-for-effort idea. If the purpose of taking effort into account is either to reward states for supporting vocational education generously or to elicit more generous support in the future, then the effort indicator logically required is one pertaining specifically to vocational education. Unfortunately, a serious gap in the vocational education data base—the lack of usable state-level data on vocational education spending—makes it infeasible at this time to produce such an indicator. Right now, the only kinds of fiscal effort indicators that can be constructed and tried out in allocation formulas are the arguably less relevant measures of state-local fiscal effort to support elementary-secondary education in general. In other words, the lack of basic financial data on vocational education precludes a full inquiry into the fiscal effort issue. In this respect, the study may have to fall short of what Congress had in mind.

Cost Differentials

A factor not yet mentioned that complicates the task of allocating federal aid appropriately is that costs of educational resources vary among the states. In particular, the salaries that must be paid to attract teachers and other staff (of given qualifications or quality) vary considerably from one state to another. When costs differ, equal dollars do not buy equal resources or services; therefore, an aid formula that appears to distribute funds equitably may not distribute real purchasing power equitably as well. In principle, it would be possible to compensate for such cost differentials by including a cost adjustment factor, or cost index, in federal fund allocation formulas. However, no such factor appears in the present vocational education formula. The issues therefore arise:

- Should allocations under the vocational education formula be adjusted for interstate differences in the cost of education?

- If so, what indicator should be used to represent the relative cost of education in each state?

What makes the cost adjustment problem difficult to deal with is that no satisfactory state-level cost-of-education index has yet been developed. In the federal education aid programs funded under Chapter 1 of the Educational Consolidation and Improvement Act of 1981 (ECIA), the cost issue is addressed by incorporating into funding formulas a rough cost proxy based on the level of per-pupil spending for elementary-secondary education in each state; however, there are reasons to question the conceptual soundness of this solution and to believe that it distorts the interstate distributions (see note 13). There are alternative cost proxies, some based on teacher salaries or other wage and salary data, that seem to be worth looking into. Clearly, assessments of the available cost indicators and the effects of incorporating them into the vocational education formula should be parts of the study.

Formula Constraints and Other Aspects of Formula Mathematics

As explained earlier, two constraints are appended to the present vocational education formula—one setting a floor of 1/2 of the 1 percent of the available funds under each state's allocation and one guaranteeing each state no less aid than in a specified earlier year. The study will have to consider whether these provisions are justified and, if so, whether they should be retained in their present forms.

The 1/2 of 1 percent floor, or small-state factor, gives the less populous states substantially more aid than they would receive under the basic population-and-income-based formula. Attempts have been made to justify this aid floor on cost grounds; for example, by claiming that vocational education programs have fixed costs that all states must incur regardless of size or that there are diseconomies of small-scale operation. Such arguments are very thin. If scale is relevant, it is probably relevant at the district, school, and program levels rather than at the state level. Nevertheless, the effects of the present 1/2 of 1 percent rule and possible variations upon it need to be examined. Among other things, it may be appropriate to consider whether some alternative method of allowing for genuine scale-related cost differences might be introduced, perhaps in the form of an explicit scale factor in the formula.

Hold-harmless provisions, which protect grantees against reductions in aid below previously established levels, are usually justified as devices for cushioning education agencies and programs against the "shock" of sharp changes in funding levels. However, this justification applies better to fractional hold-harmless provisions (e.g., a provision guaranteeing each state no less than 90 percent of the aid it received previously) than to the 100-percent hold-harmless provision now written into the law. Among the issues that merit attention in the study are whether there should be any hold-harmless rule; whether such a rule, if there is one, should be total or fractional; and how long lasting the hold-harmless guarantees should be.

Apart from the question of constraints, the main issue that has been raised about formula mathematics concerns possible changes in the form of the adjustment for state per capita income. (This subject has been covered under "fiscal capacity indicators.") In principle, it would also be desirable to deal with the more general mathematical alternative of switching from the present lump-sum fund allocation method (i.e., allocations independent of state fiscal choices) to a formula involving federal matching of state-local outlays. Unfortunately, the lack of data on state-local vocational education spending effectively precludes consideration of matching formulas, thereby eliminating what would otherwise be a significant class of policy options.

Study Outline and Methodology

It seems reasonably clear that to respond to the congressional mandate, the National Assessment will have to conduct a study that deals with the existing interstate fund allocation formula and its implications and an array of alternative formulas and their distributional effects. The assessment of the existing allocation system should have two components: 1) an evaluation of the conceptual and technical soundness of the present formula and its constituent factors, and 2) an analysis of the present pattern of distribution of federal vocational education dollars among the states. Similarly, the assessment of alternatives needs to focus on the rationales for, and conceptual merits of, possible formula changes and on how such changes would alter the interstate distribution of federal aid.

The importance of the conceptual portion of the formula analysis (as opposed to the empirical analyses of aid allocations) is often underestimated, but it is only the conceptual analysis that can clarify the rationales for, and validity of, current formula factors; identify factors that seem to be missing from the formula; and assess the overall logic of formula design. Fortunately, the extant body of literature on intergovernmental finance (including specialized literature on such topics as measurement of fiscal capacity and cost) provides a ready-made framework for conceptual analysis of the Perkins Act formula, making it unnecessary to begin the effort with a blank slate. However, some new conceptual work will be appropriate, especially on the question of how the states' relative needs for federal vocational education aid might best be defined and measured.

The empirical portion of the study is likely to revolve around a series of formula simulation exercises, in which calculations are made of how allocations to the states would be affected if the formula were altered, formula factors changed, or new factors introduced. Such simulations are just as important for studying the existing formula as for examining alternatives. For example, the obvious way to determine the effects of the present 0.4 to 0.6 bounds on the formula's per capita income factor is to compare allocations under the current formula against those produced by an otherwise identical formula with the bounds removed. A large number of these simulations will be needed to look at all the alternatives mentioned in the congressional mandate as well as the numerous others that will undoubtedly surface in the course of the study.

Various statistical tools will need to be used to characterize and compare the current and alternative distributions. Several types of standard descriptive statistics (univariate and bivariate) will be required, including measures of interstate disparities in aid, differences by region and by other groupings of states, and measures of the relationships of aid to such state attributes as population, poverty, and minority percentage (correlations, rates of change, elasticities, etc.). More specialized statistical indicators will be needed to describe differences between distributions; for example, the percentages of aid shifted by a given formula change, the degree to which effects are concentrated on particular states, and the pattern of state gains and losses. There is also likely to be a role for multivariate analysis (multiple regression and analysis of variance) to determine how aid allocations vary in relation to particular state attributes when other attributes are held constant (e.g., how aid varies with state fiscal capacity, controlling for state size). But in general, no special or elaborate methodology seems to be required for this study; standard, well-established statistical methods should suffice.

Notes on Related Issues and Analyses

Although one can think of the evaluation of the interstate funding formula as a self-contained study, some of the state-level fund allocation issues relate closely to other topics that could be covered by the new National Assessment of Vocational Education. The following are brief comments on other inquiries that could usefully be coordinated with work on the interstate funding formula.

The Intrastate Allocation of Federal Aid. The mandate for a fund distribution study in Section 403(d) of the 1990 Act refers only to the interstate distribution of aid and not to allocations of federal funds to local recipients within each state. Nevertheless, it seems desirable to append to the interstate formula study at least a conceptual analysis of the intrastate fund distribution mechanism. Analyses of both the interstate and intrastate fund allocation methods are needed to produce a complete picture of how federal funds are distributed to the ultimate recipients and, more particularly, to assess how well aid is being focused on special need populations. Moreover, similar issues of formula design arise, similar concepts and criteria are applicable, and similar alternatives are relevant at the two levels. Because the new intrastate allocation rules have yet to be implemented, an empirical analysis of within-state distributions cannot yet be undertaken. (It also is not at all clear that adequate data would be available to support such research). However, the intrastate formulas themselves can be assessed now, and combining that assessment with the state-level analysis could add significantly to the value of the whole study.

Participation in Vocational Education. The present complete lack of state-level data on participation in vocational education hampers the formula study in two ways. First, as already explained, it prevents analyses of the effects of replacing the present population factor by some measure of the actual amount of vocational education service provided by each state. Second, it makes it impossible to determine how well aid allocations under any formula match the interstate distributions of vocational pupils or services.

Progress in developing such data would open up a number of new options and analytical opportunities. However, experience has shown that what appears to be the most direct method of measuring participation—counting numbers of "vocational students"—is a conceptual dead end. Nearly all students qualify as "vocational" in the sense that nearly all enroll in one or more vocational courses. A more sensible approach, as shown by the previous National Assessment of Vocational Education, is to quantify vocational coursetaking. It is probably too much to expect that state-level measures of vocational coursetaking will be developed by the new National Assessment, but any progress in that direction would be helpful. Without such measures, we will never be able to establish convincingly how well resources are being distributed in relation to needs.

The Cost and Financing of Vocational Education. Our present ignorance of how much states and local agencies spend on their vocational education programs is a serious obstacle to policy analysis in vocational education, including analysis of alternative fund-allocation formulas. Lacking such information, we cannot consider what would otherwise be major classes of formula options, such as allocating federal aid on a matching basis or linking allocations to state fiscal effort to support vocational programs. The same data gap also rules out such evaluative procedures as comparing federal shares of different states' total vocational education funding or determining how changes in federal aid would affect the distributions of total support (not only federal) for vocational programs. Developing the now-missing cost and financial data would be a major undertaking, but the results would be valuable for many purposes beyond developing better fund allocation methods. It is not clear what the National Assessment will be able to undertake along these lines, but even some initial steps, such as laying out the design for a cost and financial reporting system, would be an important contribution.

NOTES

1. To be precise, the basic fund-allocation formula, according to which aid is calculated as a certain mathematical function of state population factors and state per capita income, has not changed since 1963, but changes have been made in certain constraints appended to the basic formula.

2. The appropriation for the main program of federal vocational education aid to states, Basic State Grants for Vocational Education, is $848.4 million for FY 1991. However, appropriations for grants to support consumer and homemaking education, programs operated by community-based organizations, and a newly created category of tech-prep programs, which use essentially the same fund allocation formula as the Basic Grants program, bring the total up to about $959 million.

3. The formula stipulates that 50 percent, 20 percent, and 15 percent of the available funds shall be distributed in proportion to populations in the 15-19, 20-24, and 25-65 age strata, respectively (modified by the per capita income factor), and that the remaining 15 percent shall be allocated in proportion to the resulting totals. This is equivalent to assigning weights of approximately 58.8 percent, 23.5 percent, and 17.6 percent, respectively, to the three population categories.

4. The statute specifies that the per capita income factors to be used in these calculations are averages of state per capita personal incomes in the 3 most recent years for which data are available.

5. For examples of such programs, see R. Salmon et al., *Public School Finance Programs of the United States and Canada, 1986-1987,* American Education Finance Association, 1988.

6. The adjustments for state per capita income in the AFDC and Medicaid formulas are based on the same ratio, PCI/PCIUS, as is used in the vocational education formula. However, there are two important differences in formula structure. In the AFDC and Medicaid cases, 1) the variable that actually enters into the formula is the square of the ratio PCI/PCIUS rather than the ratio itself, and 2) the per capita income factor is used to determine the federal share of program funding rather than the absolute dollar amount of federal aid. These variations are potentially of interest as alternatives to the present vocational education formula.

7. Under the 1990 Act, the qualifications are that no state may receive, by virtue of the 1/2 of 1 percent rule, more than the lesser of 1) 150 percent of what is received in the preceding fiscal year and 2) no more than 150 percent of the national average per pupil payment in the previous year (based on pupils counted for formula allocation purposes). The latter restriction was not previously included in the law.

8. The hold-harmless rule has had minor effects because the total funds available for distribution to the states have increased from year to year. As of FY 1989, only five states gained from the rule, of which only two, Massachusetts and New York, gained significantly (S. M. Barro, *The Distribution of Federal Elementary-Secondary Education Grants Among the States*, SMB Economic Research, Inc., Washington, D.C., forthcoming in 1991).

9. According to Section 231 of the 1990 Act, states are required to distribute 70 percent of the funds available for secondary-level vocational education programs to local education agencies (LEAs) in proportion to the LEAs' allocations of Chapter 1 grants for the disadvantaged (which are based primarily on the incidence of poverty in each LEA) and another 20 percent in proportion to the number of handicapped pupils in each LEA. Local aid recipients are then required (under Section 235) to "give priority for assistance...to sites or programs that serve the highest concentrations of individuals who are members of special populations."

10. Under state pupil-weighting schemes, state aid to local school districts is allocated according to numbers of weighted pupils rather than actual numbers of pupils in attendance in each district. Typically, regular pupils are assigned a weight of 1.0; disadvantaged pupils are assigned a higher weight, such as 1.25; and various categories of handicapped pupils are assigned weights commensurate with the relative costs of their special education programs. For examples of such weighting systems, see R. Salmon et al., *Public School Finance Programs of the United States and Canada, 1986-1987*, op. cit.

11. A per capita income factor of the same mathematical form also appears in the interstate fund allocation formula of the Department of Education's Vocational Rehabilitation program.

12. The congressional mandate uses the term "tax effort" rather than "fiscal effort." The former is a somewhat narrower concept in that it takes into account only the states' efforts to raise revenue through taxation, whereas "fiscal effort" also reflects the states' efforts to raise revenue from user fees and other nontax sources.

13. The cost index in the Chapter 1 formulas is basically an index of per-pupil expenditure for elementary and secondary education, but values of the index are limited to no less than 80 percent and no more than 120 percent of the U.S. average. The main shortcoming of such an index is that it confounds interstate differences in fiscal capacity and/or fiscal effort with differences in the cost of education. This confounding results in systematic over-estimation of education costs in high-spending states and systematic under-estimation of costs in low-spending states. For details see S. M. Barro, *The Distribution of Federal Elementary-Secondary Education Grants Among the States*, op. cit.

1990 Perkins Act Funding Issues at the Postsecondary Level

Rosemary Sullivan Zins*

INTRODUCTION

Assessing the effectiveness of Perkins programing at the postsecondary level necessitates an understanding of the missions and goals of community colleges. The community colleges came into existence by virtue of being open-access institutions designed to serve educationally and economically disadvantaged students and nontraditional, adult populations.

As open-access institutions, community colleges have had to retain strict outcome standards in order to preserve the integrity of the associate degree and to validate their role as transfer institutions. Simultaneously, they have been charged with serving a broad range of students who enroll with varying levels of competencies.

Since community colleges have historically bridged the gap between the educational competencies students need to graduate from secondary schools and the educational competencies needed to gain admission into 4-year baccalaureate degree programs, any type of performance standards used to measure the accountability of community colleges' effectiveness must take into consideration a "value-added" approach. A value-added approach makes similar sense when trying to assess the effectiveness of the new Perkins Act, especially when the primary thrust of the new Act is to serve special populations such as individuals with disabilities, educationally and economically disadvantaged students, the incarcerated, women, minorities, immigrants, and nontraditional students.

In the traditional high school market, community colleges are best noted for their experience in serving academically disadvantaged, economically disadvantaged, and underprepared students. According to the National Center for Education Statistics' study "High School and Beyond," high school seniors who entered 2-year institutions had lower records of academic achievement than those at 4-year institutions. Additionally, entering freshmen at 2-year colleges were more likely to come from low-income families than their 4-year counterparts. (Carter 1990, 2-3) Community colleges have not only been successful in recruiting these populations, but have also proudly established their ability to serve *and* retain these populations.

The community colleges have identified the nontraditional student (i.e., the student who does not directly enter a postsecondary educational institution upon graduation from high school) as a primary target market. As such, community college students are generally not "youths" but rather adults who are seeking to acquire occupational and job-related skills to improve their employability or promotability within the workplace. Community college students are typically about 28 years of age and attend school on a part-time basis in order to balance their competing personal, family, and employment demands. At present, the majority of 2-year college students (68 percent) attend part-time.

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When developing the National Assessment and designing performance and outcome measures, it is important to remember that adult students as well as secondary school youth are being served by Perkins-funded programs. It is also crucial to remember that these adult students have elected to return to school to continue their educations despite the obstacles that they must overcome, such as childcare arrangements, transportation, financial concerns, and the competing time demands of family and work. Too often, the Perkins Act is erroneously interpreted as being exclusively for the benefit of secondary school youth who are mandated by law to attend school and who attend school on a full-time basis.

Because 2-year college students enroll for varied reasons, their educational goals must be considered when outcome measures are being selected for the National Assessment. According to the American Association of Community and Junior Colleges, 50 percent of 2-year college students stated that their primary reason for enrolling was to acquire job-related skills; 36 percent enrolled in preparation for transfer to a 4-year college or university; 15 percent wanted to fulfill a personal interest; and 4 percent said they wanted to increase basic English, reading, or math skills. (Carter, 4)

Although graduation data may be valid for the 4-year institutions as well as for secondary schools, it is inappropriate as the sole measurement for assessing the effectiveness of community colleges. Reasons for enrollment must be factored into any such measurement. Since community colleges have many students who take courses simply to upgrade their job skills or retrain for a different career, the attainment of the associate degree is not necessarily the planned outcome, nor the desired goal.

Retraining and upgrading the work force has become a critical factor in maintaining this country's ability to remain technologically and economically competitive in a global marketplace. The flexibility community colleges allow their students in registering for one course and/or clusters of courses without matriculating in a degree program, and the community colleges' ability to provide customized training and flexible scheduling, directly respond to this changing labor market and to societal trends.

DEMOGRAPHICS AND THE DEMANDS OF THE WORKPLACE

The "graying of America" is underway as the baby boom generation ages and the overall U.S. birth rate declines. This is resulting in a reduced pool of young adults and a scarce labor pool. Since 84 percent of the year 2000 work force will be adults who are already employed, business and industry are focusing on retraining and upgrading the skills of the existing work force. (Johnson and Packer 1987, 16). The current skilled worker faces four to five job changes and a dozen skill upgrades over the course of his/her career.

The U.S. Department of Labor projects that 16 of the 20 fastest growing job occupations will require some type of training beyond high school at a time when the educational community is having trouble simply keeping students in school long enough to obtain their high school diplomas. (Parnell 1987, 37).

"The ominous news within our school systems seems relentless: the declining test scores, growing numbers of high school students unable to perform simple arithmetic, poor showings of American youth in international comparisons of academic ability, a national dropout rate of roughly 25 percent, and forecasts of relatively high demand for workers with technical skills." (Office of Technology Assessment 1989, 10)

Consider these facts:

- Of the 40 million elementary and secondary school students in the country today, 11 million will not finish high school. Two-thirds of the dropouts will come from the unfocused general education population.
- Of those who do graduate, a large percentage will require remediation in reading, writing, and mathematics skills when they enter college.
- Over 42 percent of the high school students in this country are enrolled in general education programs. Thirty-six percent are enrolled in college prep, and 19 percent are in vocational programs. (Parnell 1989)

The racial composition in our country is also rapidly changing, with whites a diminishing percentage of our youth population.

- By the year 2000, more than one-third of the nation's population will be members of minority groups (Black, Hispanic, Native American, and Asian). Today, while the U.S. population of 238 million includes 27 million blacks and 15 million Hispanics, by the year 2020, the total U.S. population of 265 million people will include 44 million black citizens and 47 million Hispanic citizens, possibly more Hispanics if their immigration rates increase while their relatively high birth rate holds steady.
- The minority population in the year 2000 will be much younger, in median age, than the white majority population. The Hispanic population will increase four times as fast as the white population, becoming the largest minority group by the year 2000 and having the lowest median age of any minority group.
- Between now and year 2000, more than half of all new workers hired in the United States will be minorities, nearly three times the current rate. Over the next 10 years, only 15 percent of the work force entrants will be native-born white males.
- By the year 2000, the majority of the nation's public school enrollment will consist of members of minority populations.
- Of the new job entrants, the U.S. Department of Labor estimates that most will come from groups that traditionally lack vocational education opportunity—women, minorities, immigrants, the poor, and the disabled. (New England Board of Higher Education 1989, 2)

The primary concern of more than 80 percent of employers is finding workers with a good work ethic and appropriate social behavior: "reliable," "a good work attitude," "a pleasant appearance," "a good personality". (National Center on Education and the Economy 1990, 3) A portion of these concerns can be attributed to the cultural diversity surfacing in our society and work environments. The problems associated with trying to integrate immigrants, minorities, the disadvantaged and other previously unemployed or underemployed populations into the work force to respond to the increasingly scarce labor supply are compounded by the heightening concerns of declining productivity in the workplace.

Employers are also expressing the need for a different type of worker. As our society evolves from a manufacturing economy to a service and technological economy, employers need workers who are bright, adaptive, and creative. They want and need "learners" who have good math, science, and communications skills. Workers are no longer simply asked to follow directions, but are often required to demonstrate problem-solving skills in order to complete their job assignments. America's productivity growth slowdown is becoming an alarming issue, especially since we can no longer increase productivity simply by adding more workers to the work force. The critical issue will be "working smarter," not simply hiring more employees or motivating existing employees to work harder or longer. Surveys of labor market needs indicate the following:

- Most jobs will require workers who have solid science, math, and communication skills, but fewer than one in four new employees will be able to function at the needed level.
- The types of skills necessary to implement the new computer-based technologies require workers to develop broader skills in problemsolving and decisionmaking.
- Employers are increasingly dissatisfied with the entry-level skills and work attitudes of newly hired workers. Two-thirds of all employers consulted in a national survey assessed their current pool of entry-level applicants as being insufficiently prepared. (Council of Chief State School Officers 1988)

THE EDUCATION SYSTEM RESPONDS: THE TECH-PREP PROGRAM

America's quest to develop a world-class work force that can be technologically competitive in the global marketplace is going to require immense cooperation and communication between the educational community and the economic development arms of business, industry, and government. Perkins funds should be used to encourage working partnerships among these entities. Educational institutions, both secondary and postsecondary, cannot and should not operate in isolation from the employment sector. They must assume more aggressive roles as economic development partners within their regions. Coordination between secondary and postsecondary institutions is also essential if we are to produce and develop a well-trained work force.

The tech-prep model offers an alternative grade 11 and 12 curriculum in math, science, and communication to better prepare students for the growing market of technical careers. It exemplifies integration of academic and vocational education and coordination among secondary education, postsecondary education, and the employment sector. The tech-prep model is also one of the best examples of how to implement the new Act in accordance with its three major thrusts:

1. To foster integration between academic and vocational education.

2. To encourage coordination among postsecondary and secondary educational institutions.

3. To promote increased accessibility and retention of special populations (i.e., academically and economically disadvantaged students, minorities, disabled students, and nontraditional students).

Tech-prep's applied curriculum works well for disadvantaged and less motivated students, as it provides them with a sequential, goal-directed course of study. At worst, it is a strategy to keep students in high school and promote basic skills competencies. At best, it is a strategy to encourage students to pursue the option of a technical career by continuing their educations at postsecondary 2-year institutions.

The 2+2 tech-prep initiative, as described by Dale Parnell in his book *The Neglected Majority*, illustrates the overall goals of the Perkins Act, not just the tech-prep component. The National Assessment needs to identify models similar to tech-prep for implementation of the new Perkins Act. Many vocational educators are still struggling with the terminology and implications of the new Act. It would be a travesty if vocational and adult educators were allowed to continue on a "business as usual" basis because of the problems in translating the terminology into action and because of the lack of examples of successfully integrated programs.

Assessing Perkins programs under the tech-prep initiative should initially focus on the depth and breadth of curricular reform. Factors that need to be analyzed include the degree of curricular revision, the level of articulation between secondary and postsecondary faculty, the coordination of student support services, and the labor market linkages.

The National Assessment must recognize that tech-prep programs are still in the evolutionary stages. preliminary outcome data on tech-prep students may be misleading as students may not have had the opportunity to participate in or complete the entire series of applied math, science, and communications courses. These applied courses are still in the process of being introduced and field tested. Since tech-prep students are still entering postsecondary programs with varying levels of skills and backgrounds, the "value-added" approach makes sense as it does not penalize efforts for developing new programs and improving existing programs.

The success of tech-prep programs will have to be determined by longitudinal studies to determine its true impact within the secondary schools, the postsecondary institutions, and the workplace. Tech-prep is not a quick fix but rather a long-term systems approach to changing the skills of our future work force to meet projected labor market needs. Initially, assessment data on the tech-prep program should try to focus on measuring the reactions of students, teachers, and employers to the programs through self-report surveys and case studies.

FUNDING ISSUES

There are three major issues with respect to Perkins funding at the postsecondary level:

1. Getting the dollars—the external politics
2. Spending the dollars—the internal politics
3. Keeping the dollars—the balancing act

Getting the Dollars

The external politics of "getting the dollars" centers around the postsecondary-secondary split. The formula split was a major issue during the reauthorization of the Act, as it politically and geographically pitted region against region. It was a classic confrontation of East meets West, as most of the eastern states, particularly the New England states, allocated an average of 35 percent or less of the Perkins monies to postsecondary institutions. Indeed, some states east of the Mississippi, such as Connecticut, Ohio, and Indiana, gave *no* Perkins dollars to postsecondary institutions. The opposite was true in states west of the Mississippi where only one state, Missouri, granted less than 35 percent of the Perkins monies to postsecondary institutions. (National Assessment of Vocational Education Survey 1989) The postsecondary-secondary disagreement was resolved at the national level by deciding that the percentage split should be left to the discretion of each state.

The postsecondary-secondary argument over Perkins monies is an outgrowth of the demographic trends in the general population, the declines in secondary school enrollments, and labor market trends. The issue of the postsecondary-secondary split fragments the educational community, both locally and nationally, because it perpetuates turf issues at precisely the time when educational unity is vital. The leaders of postsecondary and secondary institutions are arguing against each other over funding instead of working together to improve the educational system's responsiveness to changing work force trends and pressures. This problem is especially acute for an Act that is trying to promote increased coordination between secondary and postsecondary institutions and is promoting the 2+2 tech-prep initiative.

The external politics of "getting the dollars" involves not only the "how much" issue, but also the issue of how the funds flow to the applicants, specifically the allocation vs. the RFP (request for proposal) process. Although funds were distributed using both mechanisms under the old Perkins Act, the allocations were restricted to the programmatic priorities that were identified by the funding source. The applicants merely reacted to the stated priorities by designing distinct and separate programs if they wanted to receive the allocated monies.

Under the new Act, the allocations are restricted to specific applicants rather than specific programs. The new Act authorized the applicants to identify their own priorities for spending the Perkins dollars and encourages them to develop comprehensive and integrated programs. Additionally, the applicants are afforded much greater responsibility, flexibility, and latitude in how they spend the allocated monies, as they are provided with a broad range of acceptable and allowable program parameters. Since the new Act allows the applicants to assume a proactive rather than a reactive role in the design and management of its programs, applicants are provided with a much greater incentive for seeking Perkins funding and are given both the responsibility and the necessary authority to ensure their own successes and to control their own futures.

The new Act also has simplified the paperwork for the allocation process. Only one comprehensive needs assessment must be completed by the applicant, while under the old Act, a separate needs assessment had to be developed and submitted for each proposed program. Under the new Act, the allocation process not only requires long-term planning, but also promotes comprehensive coordination and communication.

Allocations increase the probability that institutions will aggressively seek to coordinate Perkins funds with supplemental funds from other sources such as the Job Training Partnership Act (JTPA), U.S. Department of Labor; JOBS (Welfare Reform Act), U.S. Department of Health and Human Services; or TRIO, U.S. Department of Education-Title IV in order to take advantage of economies of scale in serving special populations. These coordinated efforts will minimize the overhead costs needed to conduct grant programs, will funnel more funding to direct service delivery, and will simultaneously improve the quality and the cost-effectiveness of programs. The allocation process will significantly assist the new Perkins Act in its goal of funding a limited number of programs which efficiently and effectively serve large numbers of students in a well-coordinated delivery system.

Allocations promote higher quality programs as institutions begin to integrate the grant-funded projects into their core of operations instead of characterizing them as free-standing, temporary projects. The allocations encourage the institution to invest in the grant programs because they now have the flexibility to prioritize programs in accordance with their own established missions. As such, the grant-funded programs become much more readily accepted as "essential" rather than "expendable," services and have a much better chance of eventually becoming self-sustaining.

Allocations are a much more effective vehicle for solidifying institutional support than requiring matching contributions which often are simply inflated estimates of in-kind contributions rather than actual cash matches.

Under the new Act, competitive RFPs will still be granted but will be largely restricted to the set-aside funding for consumer education, community-based organizations, tech-prep, and sex equity programs for single parents, displaced homemakers, and single pregnant women.

Currently, the set-asides are determined at the national level as a percentage of the state's basic grant allowance. In the future, it would be preferable to grant the states the same type of discretion that was granted in the postsecondary-secondary split. The states' decision-making processes could be mandated to reflect demographic trends and labor market demands to ensure equitable distributions of this funding.

Sex equity and special populations

One of the inherent dangers in promoting specific RFPs for any priority is that institutions tend to believe that if they develop grant proposals to address these issues, they do not have to do anything else. They also tend to limit funding for those particular programs to the "soft" money that is available under the RFP. The National Assessment should ascertain whether or not institutions are spending any other monies, either "hard" or "soft," on these priorities. The answers to the questions "why?" and "why not?" should be based upon the supporting evidence of demographic and labor market trends in the geographic areas being served.

For example, most regions/institutions will probably choose to limit funding for their tech-prep initiatives to the funding available under the tech-prep RFP process. The same hold true for sex equity programs. It would be extremely informative if the National Assessment could identify the degree to which regions or institutions are using their *allocated* monies to supplement the RFP initiatives. Many institutions probably do not even realize that it is perfectly acceptable to use their allocated monies to supplement these efforts.

At the postsecondary level, the sex equity set-asides may actually overcompensate, as community colleges not only have the tradition of enrolling nontraditional and special populations but also have developed a solid reputation for successfully retaining these populations. In terms of quantity, women comprise 57 percent of enrollments in the 2-year sector. (Carter, 2) Many of these adult students are single parents or displaced homemakers who are functioning as heads of households and have returned to school to increase their earning potential to better support themselves and their families.

In terms of quality, most community colleges have been in the forefront of postsecondary institutions in responding to the needs of adult learners and nontraditional populations. Equity issues may differ substantially at postsecondary and secondary institutions due to the maturity levels of the populations being served. Also, adults *elect* to attend postsecondary programs; they are not mandated to attend by law. This disparity should be considered when the National Assessment is being developed.

The emphasis on using set-asides to promote sex equity and special populations issues at the secondary level, particularly within secondary vocational schools, may be more justified, as these schools have traditionally been male dominated due to the societal and cultural expectations regarding vocational education. As the country shifts into more technical education, the sex equity issues should eventually resolve themselves as the term "technicians" generally does not connote gender-specific or gender-dominated occupations. Understandably, the Perkins Act has chosen to attack the issue of sex equity by establishing the set-asides.

However, in an effort to promote increased sex equity under the new Act, the lawmakers have gravitated toward adopting quota systems which defy the basic operating principles of affirmative action policy. Under the new Act, institutions are required to implement immediate as well as longer-term strategies for all programs which have less than a 25 percent enrollment of one sex or the other. Quota systems are dangerous because they establish an ideal number which is then interpreted as a ceiling for enrollment.

Measurement of efforts to promote sex equity and involvement of special populations in Perkins programs should not focus solely on enrollment statistics, but should consider the degree and diversity of retention strategies. Most importantly, institutions which are expending enormous efforts to serve special populations should not be penalized because of their failure to attain a specified quota, but should be encouraged in the progress they have made. A value-added evaluation approach would accomplish this objective.

Both secondary and postsecondary institutions can and should be assessed as to their recruitment and retention strategies for serving special populations. Baseline efforts could include measurement of the following:

- extent to which outreach is conducted with community-based organizations and referral agencies
- staff participation on community boards and councils
- use of facilities for multicultural events and special populations events

- staff development activities
- evidence of affirmative action and Equal Employment Opportunity
- availability of adapted equipment for disabled students
- modifications to the physical plant to promote access to individuals with disabilities
- operation of student clubs for special populations
- availability of support services for special populations (e.g., financial aid, English as a Second Language courses, career counseling, and tutoring services)
- extent to which publications promote and encourage multicultural, non-sex-biased awareness
- extent to which supplemental grant funds are sought to serve special populations (e.g., JTPA, JOBS, and TRIO funds)

Since the new Perkins Act places more emphasis on serving special populations, data collection, design, and assessment should be coordinated with other federal programs serving the same or similar populations, such as the JTPA, TRIO Programs, and the JOBS Act.

One of the greatest problems special populations face is trying to access the system, be it the educational system, the job training system, or the human service delivery system. A tremendous amount of time and money is wasted because of the lack of interagency coordination and the incompatibility of the separate data reporting systems. A National Assessment of the Perkins Act could address this issue and advocate a mutually shared educational and training data base that could track clients/students. This same data base could also be used by employers to assess the employability and skills level of potentials job applicants.

Spending the Dollars

The second postsecondary funding issue involves the internal politics of "spending the dollars" within the institution. Internally, a balance must be achieved among the for-credit programs, the noncredit programs, and student services. We must look at who makes the decisions and why they are made. Particular emphasis needs to be placed on the "tail wagging the dog" syndrome if all the funds continue to be targeted to noncredit skill-training programs and if the "soft money" priorities substantially differ from the "hard money" priorities of the institution.

At postsecondary institutions, specifically community colleges, the noncredit programs often function as feeder programs to the degree programs. The noncredit, short-term skills training programs provide a nonthreatening atmosphere for adults and/or at-risk special populations who have been away from the formal education system. Completion of these programs often gives students the incentive and the confidence to attempt enrollment in credit-bearing courses. Most importantly, the noncredit programs promote the concept of life-long learning which is essential to surviving successfully in today's job market. The likelihood of retraining during the course of one's career is an accepted fact in today's changing world.

Conducting and evaluating programs within the constraint of 1-year funding cycles is a critical issue for postsecondary institutions trying to promote involvement and retention of special populations. For example, individuals with disabilities or limited English skills usually need more time to attain the same levels of competencies as other adult students.

The inherent limitation of 1-year grant project periods can be construed as a disincentive to enroll Perkins participants in a career-ladder approach to education and training. Once again, this indicates that the Perkins Act's orientation is basically toward the secondary schools serving the traditional youth populations. This bias often prevents postsecondary institutions from promoting longer-term career training to the part-time adult learners and the at-risk populations that need it the most.

As stated previously, obtaining an associate degree is not the only goal of community college students and should not be the only measurement used to evaluate success of Perkins programs at the postsecondary credit level. However, it should be an option available to all Perkins participants.

Keeping the Dollars

Accountability, both fiscal and programmatic, becomes a primary issue for monitoring and renewing grants, and for diversifying funding.

The National Assessment could identify the working and "fund-flow" relationships between an institution and its various funding sources to attain a true measure of the institution's efforts to promote integrated academic and vocational programing, especially for special populations. This data could be collected from institutional annual reports and audits of grant funding.

ASSESSMENT DATA

An effective National Assessment should address the progress of the new Act from an organizational development perspective. Change is difficult in the best of times as the process involves unfreezing the existing status quo, moving to a new condition, and establishing a new status quo. In order to accomplish this, the National Assessment needs to identify the sources of resistance to change, approaches used to reduce resistance, and the change agents. By using an organizational development model, the National Assessment will not only help determine how the funds are being spent, but why they are being spent in that way. Such a model will also identify impediments to progress. This information could be obtained by a self-report survey of the Perkins programs' project directors and institutional and state administrators.

Obtaining relevant evaluation data at the end of a program is obviously directly related to the type of data collected from participants at the beginning of the program. Once the National Assessment is designed, institutions and regions will be able to modify their data collection systems and procedures to produce the types of data that are considered to be important in assessing the effectiveness of the new Act. It would be helpful to develop one common intake form that would meet the reporting requirements of the various funding sources committed to serving special populations and providing vocational training.

Initially, an assessment design will necessarily need to center around the types of available data. At the postsecondary level, demographic profiles of the student body, enrollment data, retention data, and completion data are readily available; however, to produce a valid analysis, they need to be coupled with the students' self-report surveys identifying reasons for enrollment.

Followup job placement and wage data can probably be obtained from most postsecondary career placement offices. Future assessments may want to focus on employer satisfaction levels or reasons why employers hire applicants with specific types of training or educational backgrounds.

Assessment documents that could be used at the postsecondary level include the following:

- Surveys on demographic and labor market trends and demands of the specific geographic regions being served.
- Demographic composition of the student body, including both credit and noncredit enrollments and completers.
- Intake surveys for program participants which not only require necessary demographic data, but also ascertain the reasons for enrollment, in a forced-choice design format to determine baseline data for a value-added assessment.
- Results of mail and telephone followup exit surveys to determine status of Perkins program completers. The best case scenario would be to conduct such surveys 6 months after completion of training programs to address retention issues and to be consistent with existing JTPA, JOBS, and TRIO evaluation guidelines.
- Recruitment, enrollment, and retention data comparisons of Perkins enrollments vs. overall postsecondary student body enrollments.
- Case-management techniques and case studies.
- Descriptions of institutional long-range planning processes and/or documents.
- Fiscal analyses, including cost-per-student data.
- Fiscal, programmatic, and data collection coordination with JTPA, JOBS, TRIO Programs, and other related funding sources.
- Final narrative summative reports on Perkins programs from project directors, in a standardized quantitative and qualitative format that allows for national comparisons.

PROBLEMS TO AVOID

Major problems in conducting the National Assessment can be avoided by involving local practitioners in the efforts from the beginning, by working closely with 2+2 tech-prep associate degree efforts being fostered by the American Association of Community and Junior Colleges, by accessing JTPA, JOBS, and TRIO Programs' assessment data and sources, and by accessing demographic and economic development data. Specific steps that can be taken include the following:

- Involving postsecondary representation from the community college sector.

- Involving representatives of the JTPA, JOBS, and TRIO programs.
- Involving representatives of private industry.
- Designing a standardized quantitative and qualitative final summative report form that can be locally distributed at the beginning of the grant period, rather than at the end of the project.
- Redoing the 1988 NAVE Survey to identify the secondary-postsecondary distribution of Perkins funds and amending the survey to obtain the demographic and labor market trends in the geographic areas.
- Encouraging the use of allocated monies for staffing to assist in evaluation/assessment efforts on all Perkins-funded programs.
- Developing a "suggested" intake survey form compatible with the JTPA, JOBS, and TRIO programs' intake surveys for all students wishing to enroll in Perkins programs.

In practice, when an institution receives funds to operate a grant project, it generally hires grant-funded staff to implement that project. Those staff will not necessarily still be with the institution when it comes time to conduct followup that extends beyond the grant project period. Such practical issues must be considered as the National Assessment is being designed.

CONCLUSION

In summary, some pitfalls should be noted regarding the National Assessment. The primary danger is developing an assessment that is not practical to implement or is irrelevant to practioners. The second danger is developing an assessment that focuses exclusively on secondary education and disregards the role postsecondary education (i.e., community colleges) can and do play in implementing the Perkins Act. It is crucial to remember that the population is aging and we are no longer focusing only on the traditional youth population. Adult workers in need of retraining and upgrading should be considered as the emerging majority constituency to be served.

The third danger is separating vocational education program planning from economic development, labor market issues, and demographic trends.

A successful National Assessment will consider the basic constraints connected with the operation and administration of grant-funded programs and will allow for flexibility at the local level, emphasize the importance of direct service delivery to the students being served, promote interagency coordination, and measure success by value-added evaluations, using performance-based outcomes.

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Part 3:
Student Outcomes

Assessing Academic Outcomes In Vocational Education

Thomas G. Sticht*

INTRODUCTION

Although wide variations have always existed in the thousands of schools that teach vocational education, a stereotypical account of such schools is that there are three tracks: one for the college-bound student, one for the general education student who may or may not want to go on to college, and one for the vocationally oriented student who, as typically characterized, prefers "hands-on" learning over "book learning," and is aiming to go to work, not college, after high school.

This stereotypical, three-track system of education is still widely used. However, the results of the National Assessment of Vocational Education (NAVE) reported by John Wirt (1991) contradict the idea that there is strict separation between college-bound and work-bound (vocational education) students. The NAVE found that college-bound sophomores took an average of 3.2 Carnegie Units (over six semesters of work) in vocational education. This was over half the 6.0 number of units taken by vocational education students (students planning not to seek further education after high school but rather to find full-time work) (Wirt, 1991, p. 427). On average, about 20 percent of coursework by all students (not just those planning to go to work after high school) is vocational education.

THE NEW SCENE:
THE TRANSFORMATION OF VOCATIONAL WORK INTO ACADEMIC WORK

Typically, vocational education students tend to perform lower than other students on National Assessment of Educational Progress (NAEP) and other academic achievement tests of reading, writing, and arithmetic skills and of academic knowledge (science, history, etc.). Until recently, this was acceptable given these students' interests in work, not school. Today, however, the picture is changing.

Students who complete vocational education programs are still expected to acquire vocational knowledge and skill in using that knowledge in vocational activities. However, they now are expected also to acquire the knowledge and skill developed in "academic" programs (i.e., the programs usually taken by college-bound students). This is necessary, it has been argued, because the world of work, including blue-collar jobs, has become much more demanding, requiring higher levels of knowledge, thinking ability, and social skills. The idea that a child might drop out of school and get a pretty good paying job as a "shade tree" mechanic or a "seat of the pants" welder is inoperative.

In today's shops, the mechanic's and the welder's tool kits come with extensive documents, technical manuals, and schematics that demand the ability to think abstractly and to imagine the outcomes for actions before they are carried out. Good eye-hand coordination is still required on the tool and die makers' shop floors, but they are heavily aided by computer-generated designs, complex specification sheets, and programed operation sequences. The old notion of a blue-collar, "hands-on" job is rapidly being replaced by the notion of a "heads-on" job.

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Another factor pushing vocational education in the direction of providing both vocational and academic outcomes is the change of the economy from primarily blue-collar manufacturing jobs to white-collar services. In white-collar jobs, the ability to communicate well, in both oral and written language, is a key to success. Additionally, these jobs typically involve processing information, such as completing order forms, reading computer print-outs, preparing financial papers, writing reports of meetings and agreements, and a myriad of tasks involving manipulation of information in symbolic form.

To a large extent, the idea that work requires "hands-on" skills and postsecondary study requires "heads-on" skills is no longer valid. Today, as suggested above, both students who are expecting to continue their education after high school and students who expect to enter the world of work after high school must be facile with the manipulation of symbolic information. This means that the traditional way of thinking abut college-bound and vocational education students needs to change. More and more, the world of work and the world of education are merging in their skill demands. The world of work is being transformed to look more like the world of education.

ASSESSING ACADEMIC SKILLS IN NATIONAL ASSESSMENTS

The merger of the aims and skills development needs of academic and vocational students has not made its way into our methods of assessing the skills development of secondary students. The major assessment of educational progress, the NAEP, does not assess secondary students' knowledge of vocational domains of work, even though about a fifth of the courses taken by college-bound students are vocational courses. Nor do these assessments measure students' academic abilities *within* vocational domains.

For the most part, national educational assessments focus on assessing students' abilities to read, using textbook materials, news stories, poetry, or similar types of materials aimed at revealing how well students have developed large general bodies of knowledge and can use this knowledge to read and comprehend a compendium of materials. Similarly, assessments of writing are oriented towards writing narratives or expositions, featuring richness of description and expression of emotion. Sometimes a mundane "life-skill" such as writing a business letter is assessed, but this is not emphasized because it is not relevant to preparation of the college-bound student who will study classical literature and composition, and perhaps major or have a career in creative writing.

In addition to assessing reading and writing of a general and academic nature, national assessments typically include other examinations that require students to use their reading and writing skills in content domains such as science, mathematics, history, geography, social science, and English. These assessments usually require that the students possess a fairly large body of facts, concepts, principles, and rules in each of these domains of knowledge if they are to perform the various tasks called for in a superior manner.

Of these various content domains, mathematics is usually chosen as especially important domain to assess, with several important subdomains, including basic computations, pre-algebra, algebra, geometry, trigonometry, and calculus. This sequence of knowledge of mathematics follows a typical academic progression of topics, and does not focus on the full use of mathematics in vocational and other aspects of life outside the school. It is the sequence that prepares students to reason abstractly in mathematics in a manner that will prepare them for further, college-level study of the subject.

Limitations to Academic Assessments

General versus job-related reading

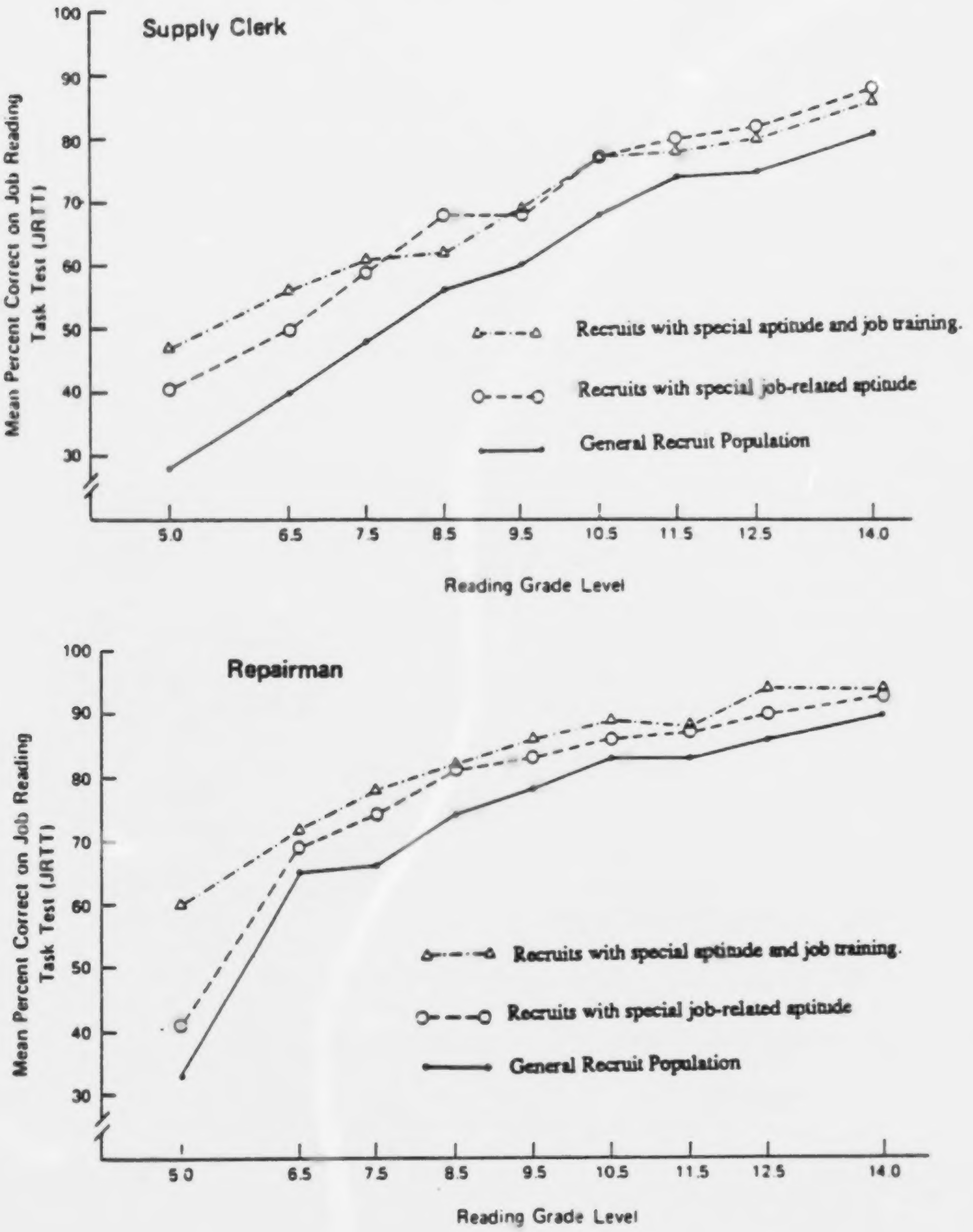
There is evidence to suggest that assessments that are confined to academic subjects may not provide an accurate indicator of how well students can perform vocational tasks. In research conducted for the U.S. Army, new recruits were administered a standardized reading test that provided an estimate of their reading skills in "reading grade levels" (Sticht, 1975). For example, a person reading at the 5.5 grade level on the standardized test would score at the level of a student in the fifth month of the fifth grade of elementary school. The recruits were also given job-related reading task tests (JRTT). These were constructed-response tests which included samples of materials taken from particular Army career fields, such as supply clerk and automotive repairman. The tests were based on materials and questions obtained by interviews with workers at their job sites.

The general and job-related reading tasks were administered to two groups in addition to the unselected sample of recruits. One group was a sample of recruits who possessed special aptitude for the job field for which a particular JRTT was developed. For example, a sample of recruits with special aptitude in automotive and shop information were administered the general reading test and the automotive repairman's JRTT. Recruits with special aptitude for clerical work were administered the supply clerk's JRTT and the general reading tests. The other group who took the job-related reading and general reading tests comprised recruits who had special aptitude for the given career field and who had completed a technical training course in the job area.

As indicated in Figure 1, for recruits given the supply clerk's JRTT and the automotive repairman's JRTT, the higher the general reading level, the better the performance on the JRTT. This confirms the value of high levels of reading skills for preparing students for the world of work. Of special importance, however, is the fact that, for the recruits with lower levels of general reading skills, those with special aptitude, or with special aptitude plus job training, performed better on the JRTT than they did on the general literacy test.

Looking at the data for Supply Clerks (figure 1 A), we see that those reading at the 5.0 grade level who had special aptitude for clerical work scored about 40 percent correct. This is equivalent to the score of the general recruit population (those without special aptitude) with general reading skills at the 6.5 grade level. Similarly, the recruits with both special aptitude and training scored around 47 percent correct, equivalent to the score of the general population with a general reading level at about the 7.5 grade level. Similar trends are found for the automotive repairman's data.

Figure 1. Scores on job-reading task tests by Army personnel with different general reading levels and special aptitude for the given job field.



The data in figure 1 show that even though recruits with special aptitude and training read at a general 5.0 grade level on the general reading test, they did considerably better on the vocationally related reading tests. If these recruits were assessed only with regard to their general reading level, using academic-oriented tests, their work-related skills would be underestimated by as much as one or two grade levels. They would do much better in their job-related reading than their general reading scores would suggest.

The Armed Services Vocational Aptitude Battery. That assessments focusing on general academic skills may not accurately reflect people's vocationally related academic skills is also indicted by data from the Armed Services Vocational Aptitude Battery (ASVAB).

The ASVAB contains 10 subtests (table 1) that range in generality from broad word knowledge (WK) (vocabulary) and paragraph comprehension (PC) reading tests, through mathematical knowledge tests of numerical operations (NO), arithmetic reasoning (AR), and mathematics knowledge (MK), to vocationally oriented tests of electronics information (EI), mechanical comprehension (MC), and automotive and shop (AS) information.

As indicated in table 1, the "academic" word knowledge test is more highly correlated with other "academic" tests (paragraph comprehension, general science, arithmetic reasoning) than with the vocational tests of electronics information, mechanical comprehension, and automotive and shop information. Paragraph comprehension, a general reading test, correlates poorly with automotive and shop (and with other vocational tests).

Table 1
Intercorrelations Between ASVAB Subtests for Profile Study Sample

(N=9173)

	ASVAB Subtest									
	AR	WK	PC	NO	GS	CS	AS	MK	MC	EI
AR	-									
WK	.71	-								
PC	.67	.80	-							
NO	.63	.60	.60	-						
GS	.72	.80	.69	.52	-					
CS	.51	.55	.56	.70	.45	-				
AS	.53	.52	.42	.29	.64	.22	-			
MK	.83	.67	.64	.62	.69	.52	.41	-		
MC	.68	.59	.52	.40	.70	.33	.74	.60	-	
EI	.66	.68	.57	.41	.76	.34	.75	.58	.74	-

AR = Arithmetic Reasoning
WK = Word Knowledge
PC = Paragraph Comprehension
NO = Numerical Operations
GS = General Science
CS = Coding Speed
AS = Auto and Shop Information
MK = Mathematics Knowledge
MC = Mechanical Comprehension
EI = Electronics Information

The ASVAB data indicate that although there are positive correlations among academic and vocational knowledge, indicating that highly knowledgeable persons tend to possess both academic and vocational knowledge, these relationships are not strong. In particular, the less knowledgeable (as indicated by the data above) may possess more ability in a vocational domain than their general academic skills would suggest. The armed services use these differences in academic and vocational knowledge to adjust their entry requirements for military service. At times, if a person's skills in general, academic areas (reading, mathematics) are too low for admittance into service, he or she may be admitted anyway if he or she has fairly high scores in one or more vocational areas (Eitelberg, Laurence, Waters, and Perelman, 1984).

Vocational versus academic mathematics assessment

In the most recent reporting on the mathematics achievement of U.S. school students, results are presented in the traditional academic manner, giving students' scores for topic areas including "numbers and operations," "estimation," "measurement," "geometry," "data analysis, statistics, and probability," and "algebra and functions" (Mullis, Dossey, Owen and Phillips, 1991). From such academic-oriented assessments, we are supposed to be able to make inferences about how well our students are prepared not only for college work but also for vocational employment. However, aside from a few "real-life" tasks, such as totaling the cost of a lunch, most items are brief and require tasks that few would perform in fields of work, even quite technical fields. For instance, one item requires students to draw a line parallel to another line that has a equation $y=2x-5$. The new line is to go through the origin 0. Then, the students are to write an equation for the new line. Most high school seniors could not do either of these tasks.

While the assessment focused on mathematics as it is generally taught—as abstract subject matter—mathematics used in the world of work is sometimes much different. For instance, in a project for the U.S. Navy, a course was developed that called for the use of essentially 9th-grade mathematics in performing complex tasks. The tasks required that students read and comprehend detailed task instructions, determine the types of computations and systems of measure to use, and communicate their results using a variety of tabular and graphic formats.

To accomplish these tasks, students were required to locate data tables in various chapters of a Navy textbook that included three sections: mathematics for managing financial resources, mathematics for managing human resources, and mathematics for managing material resources.

Figure 2 illustrates the first task in the mathematics course. It shows that even though the mathematics required may be simple addition and subtraction, when embedded in complex tasks using multiple displays distributed at different locations in a text resource book, the amount of information processing is considerable.

Figure 2. Sample of tasks from Navy-related mathematics course.

Chapter 2
MATHEMATICS AND FINANCIAL RESOURCES
Section 1
Military Pay

The following tasks are related to the content of Chapter 1 "Pay" in the text: Mathematics for Navy Career Progression.

I. MILITARY PAY (A)

1) PO1 Roberts was assigned to attend the tax advising class in January. He was supposed to answer questions members of the crew had about filing their income tax returns. After a week of classes to learn the current tax rules, he set up an afternoon training class to tell service members what he had learned.

While getting ready for the class he found he needed several visual aids. Using the most recent Basic Pay Chart he had, he drew up charts and overhead transparencies to show several things.

Among the calculations he put on his displays were:

a. The difference in monthly basic pay for an E-3 and E-4 under 2 years service.

b. The difference in monthly basic pay for an E-5 with under 2 and an E-5 with 4 years of service.

c. The annual basic pay for an E-6 with 8 years service.

d. Monthly basic pay plus BAQ for a married E-4 with 4 years of service.

e. Annual Basic Pay and BAQ combined for a married E-5 with 5 years of service.

f. The range of pay for E-5's with under 2 to 10 years of service.

g. Monthly pay for an E-4 with 4 years (living in quarters off-base) without dependents, plus BAQ, minus 10% of his base pay.

h. The percentage of increase in basic pay for an E-5 with 5 1/2 years of service who is advanced to E-6 seven months later.

Make the calculations Roberts made for his displays.

Specially developed tests were used to assess mathematics skills using decontextualized, academic formats such as columns of numbers to be added, subtracted, etc. In a separate section, vocationally oriented tasks were assigned which involved the same types of mathematics skills, contextualized within Navy tasks of the type illustrated in figure 2. Results indicated that even though students might make few mistakes using the decontexualized, academic assessments, when they were asked to perform more complex, contextualized information-processing tasks in which the same mathematics skills were embedded, they made more computational errors.

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A COGNITIVE SCIENCE MODEL FOR ASSESSMENT

The Army work on job-related reading and the ASVAB data illustrate the interrelations among bodies of knowledge and the information-processing skills used to learn and work with those bodies of knowledge. In the Army work, the fact that recruits with low levels of general literacy could perform better than expected on reading tests related to bodies of vocational knowledge they possessed illustrates that reading comprehension is not a "unitary" skill equally assessable by any test. Rather, the body of knowledge the reader possesses greatly influences the degree to which the reader can comprehend written tests.

Similarly, the ASVAB test data indicate that even though all the tests require use of reading skills, individual's scores on the "academic" and "vocational" subtests will vary depending upon their background knowledge relative to the particular test.

Both of these examples illustrate a model of human cognition in which bodies of knowledge are developed to which skill in using oral and written language are applied. Even mathematics tests involve reading the instructions, stems of questions, and completing the computational part of the task. Problems in performing on the assessments may reflect either lack of skill in the oral or written language or lack of knowledge in the domain(s) of knowledge being assessed. General education develops large bodies of knowledge in the traditional academic fields that are "addressable" using oral and written language. Thus, the NAEP science tests assess knowledge about scientific domains by administering a written language test. Therefore, the test requires both science knowledge and reading skill.

In general, the finding that both knowledge and reading skill are involved in the NAEP content area tests suggests that such tests are simultaneously assessing reading and content knowledge, though they have not been optimally designed to reveal separate information about reading and content knowledge. Interestingly, even though reading and content knowledge are intimately related, there are extensive (and expensive) NAEP assessments of reading and writing in which the knowledge domains being read or written about are not identified. The assumption appears to be that if a student can read or write about one thing, she or he can read or write about anything.

The foregoing suggests that reading can also be used to assess vocational domains of nowledge. As mentioned, the ASVAB does just this. It requires applicants for service to read about electronics, automotive and shop tools and procedures, etc. Further, just as vocational knowledge can be assessed using reading skills, reading skills can be assessed within vocational domains of knowledge. This is particularly important given the current interest in integrating vocational and academic education (discussed below).

The Human Cognitive System

In general, the points raised above suggest a model of the human cognitive system. This simple model includes *long-term memory,* which contains the knowledge base (along with language and various information-processing knowledge). When thinking is taking place, information processing occurs in *short-term* or *working memory*. The information-processing skills operate on information in the knowledge base and information acquired from knowledge bases "outside the head," such as books, speech, and nonlanguage sources. Information-processing skills may include various thinking skills as well as the communication skills using oral and written language.

This simple model clarifies the relationships among content knowledge and information-processing skills such as reading, writing, reasoning, etc. For example, it indicates that reading comprehension can be improved by improving reading skill or by increasing the knowledge base about the subject matter—or both.

The Navy mathematics project also illustrates that the load on working memory due to increased information-processing demands may disrupt other information processing, such as applying procedural knowledge about computation contained in the long-term memory. When task complexity is increased, as in performing the Navy-related mathematics tasks, working memory may be overloaded and errors may occur.

Integrating Vocational and Academic Skills Training

The current vocational education legislation calls for integrating vocational and academic education to enhance academic skills. For some, this has meant ensuring that vocational students take more academic courses, but it can also mean that vocational courses should emphasize development of academic skills (reading, writing, mathematics) while teaching vocational domains of knowledge.

The Navy's mathematics course discussed above presents a case in which reading skills (comprehension strategies), computational and mathematical communications skills, and Navy vocational content (managing financial, human, and material resources) were taught in an integrated fashion. Assessment data from general reading tests, Navy-related reading tests, general mathematics tests, and Navy-related mathematics tests indicated improvements in all the test results, with the greatest improvement occurring in the Navy-related tests of reading and mathematics.

This case study is significant because it illustrates that the academic skills of reading and mathematics can be developed within the context of a given educational domain with vocational content. And it is possible to assess separately the development of the body of vocational content knowledge and mathematics and reading skills, using vocationally related assessment tools. Also, by using "general" test instruments, it is possible to obtain an indication of the extent to which use of mathematics knowledge and reading skills has been generalized.

CURRENTLY AVAILABLE DATA FOR ASSESSING ACADEMIC SKILLS IN VOCATIONAL EDUCATION

At the present time, there are no assessments designed to reveal differences between content knowledge (vocational or academic) and information-processing skills. Indeed, the NAEP tests have been built on a model of the school curriculum rather than on a coherent model of an educated human mind—the knowledge it should possess, the processes that should operate on the various bodies of knowledge, and how the mind should operate in various settings (home, school, and work). Furthermore, it appears that the model adopted for improving the academic skills of work-oriented students is the curriculum model for college-bound students. That is, academic skills improvement means getting vocational students to look like college-bound students on tests built for the latter.

Data Sources

Data files with information on the academic outcomes of vocational students are available in the various NAEP assessments of school children. In addition, the 1986 report of the NAEP adult literacy survey is significant because it assesses young adults' skills in performing "world-of-work" tasks with embedded reading, mathematics, and more complex information-processing skills (Kirsch and Jungeblut, 1986). Although this literacy profile does not assess specific content knowledge about vocational fields, it does permit comparison of the skills of college-bound and vocationally oriented students with skills of people in the work force in performing such tasks as using a bus schedule, reading a financial page, computing a checkbook balance, and other "real-life" tasks.

The Defense Manpower Data Center (DMDC) contains millions of files on the ASVAB scores of applicants for military service and high school students who take the ASVAB for vocational counseling purposes. The ASVAB data are important because they include both academic outcomes assessment (reading, math, and general science) and technological literacy outcomes: electronics information, auto and shop information, mechanical comprehension, etc. This permits comparison of academic and technological literacy outcomes for both vocational and academic students. National norming of the ASVAB in 1980 utilized a subset of the National Longitudinal Study of 1976 population, and information from that file could be useful.

The New York State External Degree Program data files may contain information regarding the performance of vocational and academic students on competency-based assessments that utilize performance rating, portfolios, and exams. The American Council on Education (ACE) is currently developing a national version of the External Degree Program and may obtain information to compare vocational and academic students. The ACE also collects data on GED examinations; these files may contain information useful for assessing the academic outcomes of vocational students.

WHAT ARE SOME PROBLEMS TO CONSIDER?

While the data bases discussed above are available now (and new data will be added to them in the next few years), they do not address the problems discussed earlier related to assessment of the academic skills of reading, writing, oral communication, and mathematics within vocational domains. While they indicate, imperfectly, the degree to which vocational students resemble college-bound students on the various tests, they do not indicate how well college-bound and vocational students can perform on assessments of both vocational and academic knowledge and academic skills. Consequently, they may provide an unfair indication of the ability of lower-scoring vocationally oriented students to use academic skills in work settings.

For the most part, the current assessments focus on the extent to which the world of work has come to resemble the world of school, without considering the opposite perspective. That is, they do not consider how the world of school could more closely resemble the world of work.

The SCANS Work

The perspective that considers how the world of school can resemble the world of work has been taken by the U.S. Department of Labor, Secretary's Commission on Achieving Necessary Skills (SCANS). In this commission's work, an attempt has been made to study the skill demands of occupational fields such as manufacturing, health services, retail trade, accommodations and food service, and office services. In particular, attention has centered on identifying skills of high-performing businesses and industries in these occupational fields. The aim has been to identify for the schools the kinds of knowledge and skills graduates of the schools should have mastered to succeed in high-productivity businesses.

In its work, the SCANS consulted cognitive scientists who, for the most part, draw (implicitly or explicitly) upon the human cognitive system model discussed above in planning, conducting, and interpreting their work. These scientists convinced the SCANS that academic skills *always* operate in the context of some domain of knowledge. Further, the application of knowledge and skill in a task context is a unified, inseparable activity. That is, while one can conceptually distinguish between reading and preparing a customer service report, functionally, reading is an integral part of the task and is influenced by other demands of the task, as in the Navy work on mathematics discussed above.

For this reason, the SCANS attempted to produce scenarios in which the various tasks workers perform in their jobs are described as part of an overall work experience. Embedded in the scenarios are various bodies of knowledge and skills, called "know-how," that are common across various jobs and occupational fields. Figure 3 summarizes the "workplace know-how" determined to be needed by all school graduates if they are to participate productively in high-performance work environments. (Secretary's Commission on Achieving Necessary Skills, 1991, p. vii).

In this scheme, the five competency areas are domains of knowledge used in all fields of work. For instance, all workers must use (manage) various resources such as time, money, materials, people, etc. They do this using the foundation skills: reading, writing, thinking creatively, reasoning, etc. Thus, though competencies and foundation skills are discussed separately, in use they are inseparable.

One goal of the SCANS is to encourage schools to teach foundation and competency "know-how" to all students, both college-bound and vocationally oriented. The SCANS recommends that this know-how be developed by teaching students to perform tasks within the functional contexts of simulated or genuine work environments. The premise is that skills are best learned within a context that is meaningful to students, instead of in the decontextualized manner characteristic of academic education.

Figure 3. The Secretary of Labor's Commission on Achieving Necessary Skills (SCANS) lists of workplace "know-how" schools need to teach students to prepare them for work in high-performance business and industries.

Workplace Know-How

The know-how identified by SCANS is made up of five competencies and a three-part foundation of skills and personal qualities that are needed for solid job performance. These include:

Competencies - effective workers can productively use:

- **Resources** - allocating time, money, materials, space, and staff;
- **Interpersonal Skills** - working on teams, teaching others, serving customers, leading, negotiating, and working well with people from culturally diverse backgrounds;
- **Information** - acquiring and evaluating data, organizing and maintaining files, interpreting and communicating, and using computers to process information;
- **Systems** - understanding social, organizational, and technological systems, monitoring and correcting performance, and designing or improving systems;
- **Technology** - selecting equipment and tools, applying technology to specific tasks, and maintaining and troubleshooting technologies.

The Foundation - competence requires:

- **Basic Skills** - reading, writing, arithmetic and mathematics, speaking, and listening;
- **Thinking Skills** - thinking creatively, making decisions, solving problems, seeing things in the mind's eye, knowing how to learn, and reasoning;
- **Personal Qualities** - individual responsibility, self-esteem, sociability, self-management, and integrity.

Given the new focus on making the world of school more closely resemble the world of work, attention should be given to how new assessments can be developed to indicate how well secondary school students' foundation skills are being developed within the domains of both the traditional academic fields and the new workplace competencies.

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The Success of School-to-Work Transition

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> "The high school's largest service is the best possible training for economic efficiency, good citizenship, and full and complete living for all its pupils."

These thoughts were expressed by William Lewis around the turn of the century (cited in Spring, 1990). They highlight a recurrent theme: public education should contribute to students' future economic success. One manifestation of this concern is the increasing calls for developing a European-style apprenticeship system (Hamilton, 1989; Hoer, 1990; Lerman and Pouncy, 1990). This is not a new idea.

> "The German technical and trade schools are at once the admiration and fear of all countries. In the world's race for commercial supremacy we must copy and improve upon the German method of education...." (*The Report of the Committee on Industrial Education of the National Association of Manufacturers (1905)* cited in Spring, 1990.)

More recently, recommendations have come from a variety of sources. The U.S. Department of Labor (1989), the Educational Testing Service (1990), and the National Center on Education and the Economy (1990) are among others arguing for American adaptations of the German model of apprenticeship.

> "At the age of 16, the average German—or Austrian or Swiss, or Danish—young person begins the transition to adulthood...At the age of 16, the average Arkansas—or New York or California—young person faces two more years of compulsory education that too often seems, and generally is, irrelevant to the world of work (Northdruft, 1990)."

A second manifestation of the concern is expressed in language found in the most recent version of the Perkins Act, which calls for an evaluation of the academic and employment outcomes of vocational education, one of which is successful school-to-work transition.

DEFINING SCHOOL-TO-WORK TRANSITION

Traditionally, successful school-to-work transition has been conceptualized as the movement between the end of formal secondary or postsecondary education and the acquisition of an entry-level job related to the vocational program—or the continuation of job-related training and education. While this is a reasonable expectation, this definition is labor market or demand-side dependent, and ignores the unpredictability of local labor markets, the increasing dynamism of the national labor market, and what Hamilton (1990) refers to as the "youth labor market."

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A modification of this definition that recognizes the increasing instability of labor markets would define successful school-to-work transition as a condition where the student can demonstrate the skills necessary for entry into a primary labor market occupation or career path consistent with his or her aspirations. These skills would include generic occupational skills, job-specific skills, and those skills required for successful adaptation to a changing labor market. This definition is supply-side oriented and focuses on the creation of employable graduates with a broad base of skills that will allow movement into a variety of occupations. Silberman (1982) argued:

> "...it is better for teachers to focus on attainable goals that are intrinsic to the educational process itself than on extrinsic goals such as employment and earnings over which they have little control. In this viewpoint, the primary purpose of vocational education is to promote full human development through exposure of the learner to activities that are intrinsically meaningful and absorbing. These activities may utilize various forms of work experience as a part of the educational process, but the purpose of the work is to further the education of the student; the work is subordinated to the educational process."

This definition differs from the traditional one on two key points. First, the focus is on preparing individuals for the primary labor market (see Hamilton, 1990) by focusing on the skills associated with such work. The second distinction is de-emphasis on initial labor market entry. This permits the emphasis of vocation education to be on that over which it has some control.

This paper has four objectives. The first is to place the problem of school-to-work transition in its proper context by examining the sources of the problem. The second objective is to examine present and possible perspectives on what school-to-work transition means. The third objective is to discuss the appropriate foci for the National Assessment's investigation. The fourth objective is to examine related methodological issues and existing and possible sources of data. The paper concludes with an examination of existing pedagogy that enhances the school-to-work transition.

THE CONTEXT OF THE PROBLEM

A convincing argument can be made that we do a very poor job of preparing our youth to make the transition from the adolescent role of student to the adult role of productive worker. At best, we prepare some to continue their education, and we hope for the best for the rest—a hope that is increasingly unfulfilled.

In comparison with our European competitors, we do the worst job of facilitating the transition from school to work (Tucker, 1990). As noted, German, Swiss, and Norwegian young people begin the transition from school to adulthood at age 16, and work through what has been described as a "gentle process" by which workplace learning gradually supplants classroom learning (*Youth Apprenticeship, American Style, 1990*).

By contrast, 16-year-olds in the United States face another 2 years of public school that for many are boring and irrelevant to their world. The vast majority, between 66 percent and 89 percent, will begin working part-time (and some nearly full-time) to pay for their short-term aspirations: a car, $100 Reeboks, and their social life. And they work at jobs that have little or no connection to their schoolwork.

Two important consequences result from this behavior. The first is that adolescents may develop negative work attitudes as they continue milling around in secondary labor market jobs (see Greenberger and Steinberg, 1986). Further, because the students see no relationship between their out-of-school work and their in-school work, there is little possibility that these experiences will expand their vision of future career possibilities.

The second consequence of this behavior is that young adults will remain in the status of "adolescent worker" until they are in their mid-twenties, when they might "settle down" and are presumed to be mature enough for primary labor market jobs (Shanker, 1990). The effect is that we prolong adolescence for a decade longer than our European counterparts. This is a serious waste of scarce natural resources.

> "...our economy is being damaged and more importantly, young lives are being damaged, by our collective failure to help young people make a smoother transition from school to work (William T. Grant Foundation Commission on Work, Family, and Citizenship, 1988).

The problems created by an inadequate school-to-work transition result from at least three additional contextual factors: before-school factors, in-school factors, and after-school factors.

Before-School Factors

Youth entering high school today bring with them the effects of a variety of social conditions that influence their performance in school. An increasing number of children, currently more than one in four, live in poverty. Fourteen out of 100 students are children of teen-aged mothers. One in four students suffers from drug-related problems (Minnesota Federation of Teachers, 1989). At least 2 million school-aged children have no adult supervision after school. In 1988, 40 percent of users of shelters for the homeless were children (Hodgkinson, 1991).

In short, our classrooms are increasingly being filled with the kind of children whose problems we usually ignored in the past or whom we were content to "throw away." We called them "dropouts," but in fact many were pushed out of school because of our unwillingness to provide the help they needed. This has led to what some have called "social concentration camps without walls." As a society, we can no longer afford to be this short-sighted.

In-School Factors

The system of public education has created a discontinuity between school and work. This is a result of its singular emphasis on preparing students for college. As Parnell (1990) observed, "Our education system has allowed only one standard of achievement—the college-prep baccalaureate degree program—to predominate." Education is disconnected from the world of work, he argued. He also declared that if this condition is allowed to continue, the United States will find itself in serious trouble.

In addition to a myopic focus on preparing individuals for traditional college tracks, schools have two related shortcomings: high school pedagogy and the focus of high school counseling.

What we teach

Part of the transition problem area arises from what schools do and do not teach. Many argue that schools are not teaching the "right stuff," and as a consequence, students are not motivated to work hard. This leads to a situation where students emerge from school unskilled and unmotivated. An unfortunate conundrum is highlighted by Gunderson (1990) when he argues that, "students complain about schools; schools complain that business is not supporting them; businesses complain because they do not feel that the educational system is doing what is necessary and they see themselves doing more and more to qualify people for work" (p. 4). We are left with a situation where students, perhaps a majority, do not believe that what they do in school makes any difference and where business does not value what the high schools provide.

Career counseling

While nearly 40 percent of American high school graduates enroll in some form of college after high school, a sizable percentage do not complete college (Hoyt, 1990). Charner (1990) estimated that only 25 percent of these students will complete a 4-year college degree. Thus, counseling for non-college careers is important. However, most students lack adequate career counseling. As Johnson (1990) notes, educators are career illiterate. Most school guidance counselors have advisee loads of 300 or more students and do little more than take care of problems and find college application forms for requesting students. Barton (1991) observed that almost half of all high school students said they had never talked to a counselor about occupations.

After-School Factors

The third problem area is what happens after school. Adolescents in our society spend several years moving around in the workplace (or sometimes at school) until they are perceived as mature enough to hold down adult jobs. Age becomes a proxy for reliability. In the process, we have created a youth labor market (Hamilton, 1990). These jobs, according to Hamilton, are most likely to be in retail, food service, clerical, and unskilled manual work. They rarely require a high school diploma and typically do not require any training beyond a short demonstration of the job tasks.

Instead of moving into real, meaningful work as most European youth do by age 18, American youth are condemned to years of pursuing work in a severely constrained labor market where "advancement" is obtained by changing jobs. As Shanker (1990) noted, firms wait to hire applicants until they are 24- to 25-years old to see how they do elsewhere. For many other employers, a college degree become a proxy for maturity.

We are also faced with the problem of those students who do not survive the process of public education. We do little for the out-of-school youth in our country. It has been estimated that we spend $5,000-$6,000 on the post-high-school education of a youth who continues formal schooling and less than $500 on one who does not continue.

PRESENT AND POSSIBLE PERSPECTIVES ON SCHOOL-TO-WORK TRANSITION

The current perception of school-to-work transition is nested in a paradigm of vocational education that has its origins in the politics and social structures of the 19th century. The paradigm was most commonly known as "the doctrine of social efficiency." This led to a definition of the successful vocational student as one who can perform specific tasks identified with an industry or occupation. The effect of this was to look at successful school-to-work transition in terms of a count of the number of students employed in the "field for which trained."

The problem with this approach is that it ignores the reality of today's workplace. Unlike any other time in our history, workers must be able to adapt to increasingly rapid changes in their jobs. At the same time, more workers will be subject to voluntary and involuntary job changes during their working lifetimes. Some estimates place the number of major career changes at seven or eight during an individual's working life (Bernard, 1991).

As a result, it makes little sense to assume that vocational education has been successful if a graduate can find an entry-level job related to a narrow set of skills identified with a particular program. This does not mean that these skills are unimportant. However, it makes more sense to assume that, in addition to learning a set of specified skills useful in the present job, a successful graduate can demonstrate the kinds of skills which will ensure that he or she will be able to adapt to the constant change the future seems certain to offer.

Successful school-to-work transition is more than placement statistics or wage data. Knowing how to weld using current technology is a necessary but not sufficient condition of future employment. Knowing how to weld *and* knowing the principles of welding and being able to comprehend and adapt to new technologies yet to be discovered are the necessary and sufficient conditions for successful transition from school to work and for future transitions in the labor market.

THE FOCUS OF ASSESSING SCHOOL-TO-WORK TRANSITION: WHAT TO MEASURE

The current Perkins Act requires that states adopt at least one measure of learning and competency gains in academic skills and at least one measure of competency gains in behaviors related to labor market success (i.e., job- or work-skill attainment, competency attainment, retention in school, or job placement) (Hoachlander, 1991). These requirements suggest both short-term and long-term assessment strategies.

Short-Term Assessment

Short-term assessment of school-to-work transition should focus on the preparation for transition. Assessing the structural aspects of the program and student abilities are the twin dimensions of this focus.

Vocational programs should be assessed on the presence and quality of specific structures linked in the literature to successful school-to-work transition. A list would include the following (see Bishop, 1989; McKinney and Halasz, 1981):

- supervised work experience component
- placement services upon program completion
- linkage between academic and vocational studies
- early and continuing career counseling
- connecting adolescent workers with adult mentors
- concentration of coursework around a single vocational area
- quality of related jobs or occupational experiences
- characteristics of cooperating firms providing training

Generally, assessment strategies focused on vocational participants should identify the potential for transferring school-based learning to work settings. The specific performance measures should focus on the extent to which vocational education develops both knowledge of technology and the process skills of work-based learning that will be the key to individual and corporate success.

The knowledge of current technology and the ability to learn and adapt to new technology will be a key element in successful school-to-work transition. In addition, Carnevale (1990) has identified a list of process skills, or "upskilled worker traits," found to be necessary for the emerging labor market. The study should include quantitative and qualitative assessments of vocational program participants'

- Ability to transfer school-based learning to work settings
- Capacity to learn how to continue learning in a work setting
- Reading levels
- Teamwork skills
- Writing and computation levels
- Interpersonal communication skills
- Problem-solving abilities
- Personal management skills
- Self-esteem
- Leadership abilities
- Negotiation skills

Some of these upskilled worker traits can be measured by behaviors available through an analysis of school records. Such behaviors include attendance and tardiness patterns, participation in vocational organizations and leadership within those organizations. Other behaviors and attitudes related to upskilled worker traits include dimensions that might be measured through employer assessments (where appropriate) and through self-assessments by students. These quantitative assessments would include (Barton, 1991)

- Ability to use basic skills in a work environment
- Students' success in integrating school and work learning
- Subsequent occupational socialization

A second, short-term dimension of school-to-work transition has been discussed by Dole (1990) and Hoachlander (1991). They identified the sort of school-related outcomes one should associate with participation in vocational education. These included

- Gains in academic achievement
- Program completion rates
- School completion rates
- Successful completion of higher level vocational courses
- Completion of higher level academic courses
- Subsequent pursuit of related education or training
- Acquisition of the specific skills necessary to obtain employment in the students' area of occupational interest

Long-Term Assessment

The long-term assessment should focus on patterns of transition. This would include the following:

- Patterns of entry into and progress through primary labor market jobs, including
  - self-employment
  - patterns of earnings
  - duration of employment
  - job satisfaction and job satisfactoriness
  - sustained employment in a primary labor market occupation

  - job quality of post-school employment

- Participation in subsequent education and training

- The extent to which employers recognized the vocational program completion as a creditable credential

- Subsequent use of school-developed, work-related skills

METHODOLOGICAL ISSUES

Defining the Vocational Student

A continual problem in assessing the effects of vocational education participation is defining a vocational participant. It has been known for some time that most high school students take some vocational education—perhaps as many as 79 percent (Campbell, Gardner, and Seitz, 1982). Meyer (1981) found considerable disagreement between individual and school classifications of vocational student status. Stone (1985) speculated that the 30 percent disagreement shown in the literature probably results in the exclusion of "academic" students from vocational assessments that rely on school classification of status.

The best strategy to account for this would be to follow Meyer's (1981) advice and use continuous measures of vocational participation available through school transcripts. It would also be useful to control for other causes of post-high-school attainment, such as the extent to which students concentrated their coursework in a given vocational area, other kinds of vocational participation, and the amount of advanced coursework included in their school experience (see Stone, 1988).

There are a number of research issues surrounding assessment of school-to-work transition. The following is a brief list of issues related to the use of existing data bases for post-hoc analyses and to the generation of new data through qualitative processes.

Existing Data Sources

The use of national data bases may obscure the quality factors within programs that lead to successful school-to-work transition. It is not valid to assume that all business education programs or all electronics programs are equally well structured or equally well taught. This problem might be overcome if existing (particularly the National Education Longitudinal Survey, 1988) and future educational surveys can incorporate questions that would assess the quality of the various vocational programs and the results of participation.

There are a number of data sources that could provide information for assessing the short-term and long-term impact of vocational education participation on school-to-work transition. Two sources of data would be useful for these purposes: national longitudinal studies and national recordkeeping systems.

National longitudinal studies

Although there are scores of national longitudinal studies available, four offer a set of variables that will address some of the issues related to school-to-work transition.

Learning Through School-Based Work-Experience Programs (LSBWE). This 5-year study was initiated in 1988 and was funded through the National Center for Research in Vocational Education. The focus of this study was to answer a series of questions about work-experience programs regarding the effect of working while in school. Specifically, the study was designed to examine the effect of the quantity and quality of work experience on educational, economic, social, and psychological student outcomes and to determine how the school might arrange an environment to amplify the desirable effects of work experience.

The sample includes approximately 3,000 high school and community college students located in six purposively selected sites. Data were collected from students, their employers, school records, and instructors/coordinators of school-supervised work experience programs. Students completed an annual followup. Categories of variables include

1. Past and present labor market experience
2. Educational experience and aspirations
3. Work attitudes and behaviors
4. Job quality characteristics
5. Socioeconomic indicators
6. Social/psychological indicators

The National Longitudinal Study of Youth (NLSY). This is one of a series of five national longitudinal surveys of labor market experience sponsored by the U.S. Department of Labor. These studies were designed to monitor the labor market experiences of groups which were of special concern to policymakers.

The original national probability sample consisted of 5,578 females and 5,828 males who were between the ages of 14 and 21 in 1978. The sampling procedure included an oversampling of minorities.

Data were collected directly from students, through interviews with family units, and from school records (transcripts). Students completed an annual followup. Categories of variables included

1. Past and present labor market experience
2. Job characteristics
3. Educational experiences and aspirations

4. Social/psychological indicators

5. Socioeconomic indicators

6. Local labor market conditions

7. Deviant school and social behaviors

High School and Beyond: A National Longitudinal Study for the 1980s. This longitudinal study was designed to examine the impact of in-school activities on postsecondary educational attainment. A secondary purpose was to capture changes that had occurred in education-related and more general social conditions since the 1970s.

The study design included a highly stratified national probability sample of over 1,100 high schools. This yielded a sample of 30,000 students of the class of 1982. In addition to the student surveys, transcripts were obtained for approximately half of the students. Included in the data are variables that measured

- Vocabulary, math, and reading ability
- Educational experiences and aspirations
- Social/psychological indicators
- Social status indicators
- Work experience in high school
- Post-high-school labor market experience

National Educational Longitudinal Study of 1988 (NELS 88). The NELS 88 study is part of a program of longitudinal studies sponsored by the National Center for Education Statistics. Other studies in this program include the National Longitudinal Study of the High School Class of 1972 and the High School and Beyond longitudinal study.

The purpose of NELS 88 was to provide a data base that would identify school attributes associated with achievement, the transition of different groups from eighth grade to secondary school, the influence of ability grouping on future educational achievement, and changes in educational practice over time. Data were collected from students, school records, parents, and teachers. In addition, the design calls for area vocational school data augmentation as well as vocational-technical institute augmentation.

National recordkeeping systems

WORKLINK is a joint initiative by the National Alliance of Business, the National Urban League, and the Educational Testing Service. It is a recordkeeping system linking education and training with business and industry. Initially (1990), WORKLINK programs are being field-tested in two sites (Indianapolis and Tampa).

New Data Needed for Assessment

While it is likely that existing sources of data will provide much useful information for the assessment of the success of vocational education in facilitating school-to-work transition, there are questions of concern that are not addressed. At least two strategies exist to overcome this problem.

As noted earlier, questions of interest can be added to current national longitudinal studies such as the NELS 88. While the initial focus of NELS 88 is on within-school transition, it offers the best potential for including additional questions of interest to the current National Assessment since the students in this cohort will not be expected to graduate until 1992. A bank of questions focused on the school-to-work transition discussed in this paper could be added while the students are still in school or on the first followup survey.

However, not all of the questions or issues posed in this paper lend themselves to quantitative assessment. One strategy that holds promise for helping to understand how participation in a vocational program facilitates school-to-work transition is the case study method.

The case study method envisioned for the National Assessment would require initial validation of the criteria for assessing school-to-work transition. Using these criteria, nominations of exemplary schools or programs could be sought through state school officers. A number of these "outliers" could be selected to reflect different communities or types of students served. The purpose of these case studies would be to identify the conditions or circumstances that lead to exemplary performance. A secondary purpose would be to identify what is replicable in other settings.

ENHANCING SCHOOL-TO-WORK TRANSITION

The ability to learn in the workplace is a function of vocational program quality, the quality of the related work or simulation experience, and the extent to which these two are related. On the job, quality can be assessed by examining the nature of the training, the characteristics of the work environment (e.g., autonomy, problem-solving opportunities, etc.), and the philosophy of the training sponsor.

In the classroom, vocational program quality can be assessed by examining the pedagogy to determine the extent to which use is made of the real experience of work to develop occupation-related skills and behaviors and advance the use of basic skills. Historically, four forms of pedagogy have been used for this purpose: apprenticeships; simulations, shops, or labs; cooperative education; and school-based enterprises.

Apprenticeships match individuals with "masters" of a trade and combine school-based training with on-the-job training. Usually, formal agreements are signed by all parties. However, the average apprentice in the United States is a person in his or her late 20's. In their present structure and practice, apprenticeships do not offer much in the way of school-to-work transition for adolescents or young adults.

Simulations, shops, or labs use simulated work in simulated settings to achieve the goals of the curriculum. Although they are commonly used in vocational education, they are arguably the least effective form of pedagogy for facilitating school-to-work transition. By contrast, existing evidence on cooperative education (and similar evidence evolving for school-based enterprises) suggests the usefulness of these forms of pedagogy in facilitating school-to-work transition.

Cooperative vocational education uses real, productive work in an actual work setting to advance the goals of the curriculum. School-based enterprises use real, productive work in controlled settings for the same purpose. These forms of pedagogy are discussed below.

Cooperative Vocational Education

Cooperative vocational education (co-op) has a long history in the United States as a method for school-to-work transition. Programs that use the co-op method place students in jobs related to classes they are taking, and develop agreements and plans for linking classroom instruction with on-the-job training.

Even though programs that use this method provide a direct school-to-work link and have demonstrated value in facilitating school-to-work transition, few students participate in these programs. Recent figures from the High School and Beyond Longitudinal Study of the High School Class of 1982 indicate that only 7.8 percent of students participate in cooperative education programs. More recent evidence would suggest that participation is decreasing at a time when more students are working during high school. Thus, fewer students are able to formally connect their work with their schooling.

School-Based Enterprises

In school-based enterprises, students work in, and often run, enterprises that create real products and services that are consumed by other students or the general public. There are many examples of successful enterprises in the literature (see Stone, 1990). They typically include daycare centers, retail stores, floriculture shops, automobile repair services, and credit unions. In some instances, schools take over defunct businesses in their community. Some enterprises are the result of partnerships with local businesses, others result from the ingenuity of the vocational instructor or other educational leader.

The full extent to which school-based enterprises are used is not well known. At present there have been no formal surveys of practice that might shed light on this useful form of learning.

CONCLUSION

The National Assessment's investigation of school-to-work transition should consider both short-term strategies and long-term strategies. The short-term assessment should focus on vocational education participants' potential for moving successfully from the school setting to the workplace and the programs' success in preparing them for that move. Long-term assessment should look at *patterns* of entry and progress in primary labor market jobs. An assessment with these two dimensions should yield useful information for both practitioners and policymakers.

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The Relevance of Vocational Education for Subsequent Employment

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INTRODUCTION

In drafting the 1990 Perkins Act, Congress was concerned that the education students receive in vocational courses be "relevant" to their subsequent employment. But what does relevance mean and how would we measure it? Does it refer to the direct transfer of specific techniques or pieces of information, to more general abilities or know-how, or to broad attitudes and behaviors? What if vocational graduates get good jobs outside of the specific areas for which they are trained? Does that necessarily mean that their education was irrelevant to subsequent employment?

Like so many seemingly simple questions, the one regarding vocational courses' relevance to employment remains simple only if we fail to think about it seriously. The question is difficult to answer because the answer depends on the ultimate purpose of vocational education. This purpose not only is difficult to define but also is changing. In fact, we can view the 1990 Perkins Act as an attempt to change the purpose of vocational education. As the model changes, the way we think about relevance—particularly the way we measure and assess it—must also change.

In this paper, three alternative models of vocational education are identified. Within the context of each model, the relevance of vocational training to subsequent employment is discussed. Based on the discussion, suggestions are offered for the design of the National Assessment of Vocational Education called for by the 1990 Perkins Act.

THREE MODELS OF VOCATIONAL EDUCATION

1. **Preparation for a specific occupation:** In the first model, vocational education is preparation for specific occupations. This type of education is aimed at students who plan to enter the labor market immediately after high school or community college and the programs are specifically designed to prepare them for a particular occupation.

2. **Broad occupational preparation for nonbaccalaureate students:** In the second model, vocational education is designed to provide broad occupational preparation and a basic educational foundation for nonbaccalaureate students. This model emphasizes maturation of nonacademic students, career exploration, building some type of connection to the labor market or to post-school activities enjoyed by college or college-bound students, and training in broad occupational areas.

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3. **A foundation for broad educational reform:** In the third model, vocational education is a crucial building block for fundamental restructuring of education for *all* students. This approach is based on an educational strategy that rejects the distinction between vocational and academic education and advocates applied education that integrates vocational and academic instruction for all students, including those bound for and enrolled in 4-year baccalaureate education.

The 1990 Perkins Act and the associated reform movement can be viewed as an attempt to move from the first model (preparation for a specific occupation) to the second model (broader occupational preparation for nonbaccalaureate students). Much of the discussion and research related to broader educational reform supports the third model, but it is unlikely that the Perkins Act will be the primary vehicle through which such a reform will come about. The amendments do emphasize integration of academic and vocational education, but early experience suggests that this will be seen as a reform of vocational education rather than of education in general. Academic material probably will be added to traditional vocational programs, but it is unlikely that much effort will be made to incorporate vocational instruction into traditional academic programs.

Model 1: Specific Occupational Preparation

If the purpose of vocational education is to prepare students for particular occupations, it is simple enough to ask whether students end up in those occupations. This concept has resulted in a measure referred to as the "training-related placement rate" (TRP). The last National Assessment of Vocational Education (NAVE) did some very interesting work in this area, making important improvements in the concept. Previous work had been based either on school- or self-reported student categorizations as vocational, academic, or general students and, among vocational students, as participating in programs for particular occupations. However, analysis of student transcripts indicated that self-reported categorizations often did not match school-reported categorizations and that these often did not bear obvious relationships to courses and course-sequences taken by the students. Indeed, vocational coursetaking in both high schools and community colleges was distributed more or less evenly, and almost all secondary students took at least one vocational course. Therefore, it made more sense to talk about students taking more or less vocational instruction than it did to place them in vocational, academic, or general student categories.

By using student transcripts, the NAVE staff developed a "course utilization rate" (CUR).[1] This measure was based on determining the relevance of individual courses to particular occupations. The work by NAVE used a course/occupation crosswalk developed by the National Occupational Information Coordinating Committee (NOICC).[2] When a student's post-school occupation was categorized, a count was made of the courses the student took which served as preparation for the occupation. The ratio of this number to total vocational courses was the CUR. The NAVE staff further refined this measure by excluding all occupations for which no preparation was necessary, arguing that it made little sense to measure the relevance of a course to an occupation that needed no formal preparation. (The following discussion refers only to the "skilled jobs CUR.")

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[1] The following discussion of the NAVE findings is based on U.S. Department of Education *Final Report* (1989).

[2] For a description of the NOICC crosswalk and changes made by the staff of the previous National Assessment of Vocational Education see Horn and Meyer (1990).

What did the NAVE research find? Using the sophomore cohort of the High School and Beyond (HS&B) data set (most of these students graduated from high school in the spring of 1982), the research found that by 1985, 44 percent of the vocational courses taken by students in the sample were relevant to their subsequent employment, up from 38 percent in 1983. Thus, 3 years after graduation, the students' education appeared to be more relevant to their employment than it had 1 year after graduation.

There was a sharp contrast between men and women. The CUR for women was 53 percent in 1985 and 46 percent in 1983, while the rate for men had risen from 32 to 38 percent over the same period. Women had rates of 65 percent for business (more than one-half of all courses taken were in the business field) and 79 percent in health-related occupations (only 3 percent of the courses taken were in this field). The CURs for both business and health rose between 1983 and 1985. For women, the only other large area was occupational home economics, accounting for 18 percent of the courses. However, the CUR for this occupational sector actually fell from 51 to 32 percent between 1983 and 1985. For men, the highest CURs occurred in three traditional male occupational areas—agriculture (43 percent), construction (42 percent), and mechanics and repairers (45.5 percent).

In summary, findings showed that rates were higher for women, both men and women had their highest CURs in occupations traditionally dominated by workers of their own sex, and CURs rose as graduation receded.

CURs were higher for postsecondary students. About 58 percent of vocational courses were used in subsequent employment. Only about 53 percent of courses taken in proprietary schools were used, while 60 percent of courses taken in community colleges and public technical institutes were used. The authors concluded that "students of different races and socioeconomic status who take similar amounts of training, choose similar fields, and enroll in similar types of institutions, are likely to experience similar economic outcomes [the use of vocational training in subsequent employment]" (p.110).

The NAVE report also analyzed the reasons for low course utilization. The report concluded that the problem was not that in the aggregate too many students were trained for given occupations. Rather, students voluntarily chose to work in other occupations or perhaps were unable to find training-related jobs in their geographic areas. Thus, there did not seem to be a large overall mismatch between training and employment areas. However, there may have been some local mismatches (e.g., students were not able to find the openings that existed or changed their minds, perhaps having been unsure when they originally chose their fields). One policy implication is the need to improve counseling, placement, and local planning.

This NAVE research lays the foundation for some interesting subsequent work. One area involves further examination of the causes of variation in the CURs and of reasons why students do not end up in occupations for which they trained. The methodology used by the earlier NAVE study to examine the causes of low utilization is highly inferential and can be considered as only a first step. We will not have a good answer without more direct information, probably from interviews or appropriate surveys of completers.

The crosswalk itself is another area that could use additional work. Clearly, the results can change dramatically, depending on how broadly we interpret the skills learned in a particular course. CURs can be raised simply by using a broader definition of skills learned in particular courses. For similar reasons, it is difficult to determine a normative standard against which to judge the level of a CUR. Is 50 percent high or low? This normative judgement depends on the nature of the crosswalk, the breadth of the skill definitions, and the underlying model of vocational education being used. Indeed, these conceptual problems have been made more difficult by changes in vocational education called for by the 1990 Perkins Act.

Model 2: Broad Occupational Preparation

During recent decades, traditional vocational education has frequently been criticized for providing training appropriate only for narrowly defined occupations. As the skill needs of the economy were perceived to change more rapidly, vocational education, especially at the secondary level, appeared to provide training for jobs that would soon be obsolete. Low training-related placements or course utilization rates also suggested that narrowly defined vocational education was misguided. Training that was useful only in one occupation was wasted if the student did not work in that occupation, which was the case for many students who took vocational courses or even full sequences of vocational education. Moreover, the central educational reform thrust of the 1980s called for increasing academic course requirements for high school graduation. In many states, this restricted the time available for vocational courses. While reformers may not have set out to shrink vocational education, it was an outcome many did not oppose. The belief that vocational education was a thinly disguised tracking system or a "dumping ground" for students who could not make it in the more desirable academic tracks further weakened the support for vocational education.

Whatever the ultimate merit of these ideas, the 1990 Perkins Act seeks to broaden the education received by students in vocational programs. Thus, the Act encourages both integration of academic and vocational instruction and teaching much broader information about the industries. For example, instruction in carpentry would include strengthened academic material as well as components or courses that teach construction design, project planning and management, legal issues, and other relevant topics. While students would be prepared to go to work as carpenters, they would also have both a solid grounding in the basic academic areas and some background in many related occupations. This improved vocationalism would serve to motivate many vocational education students and attract others who were not interested in straight academics. The work-related focus would also provide natural ties to the business world and would help connect students to post-school work. Furthermore, research (including some by the earlier NAVE) suggests that for some students, standard academic material is taught more effectively in applied courses (Meyer, 1989).

In the second model, the focus on the particular occupation begins to blur. Nonbaccalaureate students will indeed be prepared for post-education work, but they will also have solid preparation for a wide variety of related work and will be better prepared to acquire new skills as technology and work processes change.

What implications does this have for evaluating the relevance of vocational education for subsequent employment? One conclusion is that it confuses the interpretation of measures such as training-related placements or course utilization rates. If the purpose of the current reforms is to weaken the links between in-school instruction and particular occupations, measuring the extent to which students end up in particular occupations no longer measures the extent to which goals of education are met. For example, if the goal of vocational courses is to help teach basic academic skills, those courses will presumably be useful in any occupation where basic academic skills are used. In addition, if students learn about aspects of an entire industry, placement in any job in that industry might be a related placement. The broader education presumably will teach students managerial, planning, organizational, problem-solving, and interpersonal skills that will be of use in many industries and occupations. For example, agricultural vocational education and related programs such as Future Farmers of America are often cited as exemplary vocational models because they prepare young people for a wide variety of leadership roles outside of farming. From this perspective, the more successful the program, the lower the apparent relevance of the courses if a narrow measure such as the TRP or CUR is used.

At the very least, full implementation of the reforms called for in the 1990 Perkins Act would require a thorough revision of the crosswalk that links courses to particular occupations. If the old measures are used, then paradoxically, successful implementation of the spirit of the 1990 Perkins Act may lead to a decline in CURs as students take advantage of the wider range of opportunities opened to them by the greater breadth of their education. Alternatively, if the definitions of course relevance are widened (e.g., to include all jobs in an industry), the CURs will rise. However, that rise will not necessarily yield information about whether the new, broader education is more effective in opening opportunities than the traditional approach.

In terms of assessing skill relevance, the use of broader measures not tied to the increasingly vague association between particular courses or sequences and occupations or jobs is indicated. Two strategies can be outlined. One defines a set of generic skills and measures the progress students make in those skills while they are still in school. The second relies on general labor market measures such as income, compensation, wages, or employment to evaluate the effectiveness of vocational education.

The first approach has the advantage of not requiring data on post-school employment. Another advantage in the short run is that the U.S. Department of Labor, Secretary's Commission on Achieving Necessary Skills (SCANS), is already identifying a list of generic skills. These skills are to be defined in a way that will make assessment possible. However, this approach depends entirely on the validity of the skill definition and the assessment method, and it completely abandons any attempt to evaluate directly the relevance of particular programs or courses to particular jobs or occupations. Of course, SCANS-like lists of skills could be developed for different occupations, but this would be a very large task that would require constant updating. In any case, it would lead back to linkage between course content and a particular occupation.

The use of more general labor market outcomes (e.g., wage, compensation, or employment) provides a measure of the effectiveness of a particular program or course without having to establish *a priori* a link between the education and the job. Indeed, there is already a considerable literature that uses wages to evaluate vocational education. Some of these studies suggest that even traditional vocational education measures up well when compared to the alternatives. For example, a 1987 study by Campbell and his colleagues found that after controlling for a variety of characteristics including past and present enrollment in higher education, vocational graduates were about 8 percent more likely to be in the labor force and 3.5 percentage points less likely to be unemployed than graduates from academic programs. Pay for vocational students was higher as well. In contrast, an earlier study by Rumberger and Daymont (1982) found slightly higher unemployment and lower pay for vocational students.

Research using high school transcripts has allowed a more subtle analysis of the effects of different mixes of courses. Thus, Kang and Bishop (1989) found that for those students who did not attend college full time after high school, and

> ...who took four full-year vocational courses and eight full-year academic courses in their final 3 years earned substantially more, immediately after graduating, than students who took 12 academic courses. Business programs, for example, raised the earnings of females by $1,940 or 40 percent and trade/technical programs raised the earnings of males by $1,536 or 22 percent. Once a student has taken four vocational courses, further increases in vocational coursework at the expense of academic courses have little or no positive effect on earnings immediately after graduation (p.113).

It is possible to argue that educators should not be concerned with whether vocational students end up in particular occupations, but should be concerned that the education the students receive is better than (or at least as good as) the alternative types of education are in achieving students' broad life goals.[3] While income and earnings are approximate measures of the achievement of life goals, their importance cannot be denied.

There are problems with the wage or compensation analysis, as well as serious methodological issues. (See the paper by David Stevens included in this publication.) One problem involves how to treat students who go to college directly after high school. Limiting samples to students who go to work after high school can be misleading. In addition, a general analysis of wage or compensation changes resulting from vocational education does not pinpoint any of the causes of those economic changes. Even if it were possible to show that some vocational programs had strong positive effects, unless the underlying causes are quantifiable, it is unlikely that standard earnings or wage analysis will identify those causes. Without that information, policy planning and replication are thwarted. (A similar problem is encountered in analysis of the effects of teachers on student test scores. A great deal of research suggests that teachers can have a strong influence, but to date, researchers have been unable to identify which teacher characteristics are relevant.)

Finally, wage- or labor-market outcome analysis takes time. The effects of today's policy will emerge over several years; therefore, no analysis initiated by the current National Assessment could be used to evaluate the effects of the 1990 Perkins Act.

Despite these problems, analysis of labor market outcomes should be an important part of any assessment. Over the last 20 years, social scientists, including those involved with the previous NAVE, have made progress on many of the methodological problems that plague this type of research. The current National Assessment could continue to contribute to that progress. While new data will be of only limited usefulness for a report written in 2 or 3 years, the current assessment could make an important contribution by helping strengthen the available data for future analysis.

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[3] From the point of view of educational policy, it is important also to take account of the cost of vocational education. Since vocational education usually costs more than academic education, it may not be cost-effective even if its graduates do as well as they would have in other programs.

Model 3: A Foundation for Broad Educational Reform

Although the Perkins Act calls for integration of academic and vocational education, it is almost inevitable that these changes will be seen as reforms of traditional vocational education. That is to say, more academic material will be introduced into many vocational courses, but the introduction of vocational-like material into standard academic courses will be rare. After all, vocational education has a particular institutional and political history which sets it apart from education in general. Vocational educators have their own professional associations and lobbyists; there is a separate national center for vocational education research; and vocational programs are usually administered by separate departments of local school bureaucracies which report to separate agencies at the state level. The Perkins Act itself is an expression of the uniqueness of vocational education. Education is a state and local function, but through the Perkins Act, the federal government articulates its particular interest in vocational education.

Despite the Act's focus on vocational education, much of the pedagogic research and theory that supports proposals in the Act can be applied to all students rather than only to those who traditionally take full vocational sequences, see themselves as vocational students, or are classified by their schools as vocational students. For example, one influential position argues that successful performance in the classroom is only weakly related to successful performance at work or in society (Resnick, 1988; Scribner,1988). Others argue that even the most basic skills are learned more effectively when they are taught in the context in which they are used (Sticht, 1989). Some evaluation research indicates that there are benefits for many students in using applied material to teach abstract concepts (Meyer, 1989).

This line of thinking has led to a variety of related reforms that, in general, attempt to connect schooling more closely to nonschool activities. The reforms include a renewed interest in models of apprenticeship, cooperative education, and school-based enterprises (Stern, 1990; Stern et al., 1990). Advocates of expanded apprenticeship programs in this country point out that about 70 percent of all German youth (starting at age 16) pass through apprenticeship programs in which most learning takes place on the job and the content of the classroom sessions students attend one day a week is coordinated with activities on the job (Hamilton, 1990).

Advocates of the models of reform have also called for a variety of alternatives to the traditional paper and pencil approach to assessment. They include proposals for portfolio and project-based assessment and attempts to devise tests that can assess a student's abilities to solve complex problems (Berryman, 1990).

Vocational education, especially if it is broadened through some of the programs now being encouraged by the Perkins Act, lends itself to many of these reforms. But the crucial political issue concerns whether students, parents, educators, and policymakers believe that a more applied education is appropriate for students headed toward traditional baccalaureate degrees. In fact, it is unlikely that one would find much evidence of these kinds of reform in the nation's most prestigious public and private schools.

There are two problems related to the bias against general educational reform. First, it is possible that baccalaureate-bound students would be better served by a more applied and less abstract education. After all, SAT scores have been falling, even among the best students, and the high correlation between social class background and the apparent quality of the schools suggests that the perceived success of these schools may have more to do with resources at home than with any special value added by the school. Second, as long as vocational education (even reformed and renamed) is seen as most appropriate for students who will not or cannot go on to 4-year colleges, it will be very difficult to avoid making it a track for "second class citizens."

If we take the broader view in which vocational education serves as a cornerstone of general educational reform, the traditional approaches to assessing the relevance of vocational education to subsequent employment would yield more misleading results. This further increases the value of broader measures such as those based on well-designed skills assessments or eventual labor market outcomes as opposed to direct matching of courses or sequences to occupations.

Since the Perkins Act does not call for a general education reform, the National Assessment is not in a position to assess the effectiveness of such a reform. Nevertheless, it would be worthwhile for the National Assessment to develop some pilot projects to study the effectiveness of more applied education for baccalaureate-bound students. There are a few occupationally oriented schools explicitly designed to prepare their students for 4-year colleges, including one of the high school academies in Philadelphia and Lane Tech in Chicago. Lane is considered the best school in Chicago; it continues to require shop courses for all students. Studying the experience of college-bound students in cooperative education programs would also be valuable. The political context that shapes vocational education would be transformed if the current National Assessment produced research which suggested that reformed vocational education provided a solid preparation for selective 4-year colleges.

CONCLUSION

Based on this discussion, the following six suggestions are offered for the design of the current National Assessment of Vocational Education as it seeks to understand the relevance of vocational education for subsequent employment.

1. Whatever work the National Assessment does, it should explicitly identify the underlying model of vocational education on which the analysis is based. The author has argued that normative measures of "relevance" would change as the model changes. This is particularly important at this time since the 1990 Act in effect seeks to change the model on which vocational education is based.

2. More work is needed on the methodology for matching courses or sequences to occupations and jobs. Measures of "relevance" can change significantly simply by narrowing or broadening the conception of skills taught within a given course. At the same time, additional work on the occupation-course crosswalk should only be undertaken if the assessment staff is convinced that the conceptual basis of the crosswalk is consistent with the model of vocational education they are using.

3. Research on why so many vocational students do not end up in occupations for which they were presumably trained would yield a great deal of useful information. (Some work on this could be done with the longitudinal data sets, but some small-scale surveys of graduates of particular schools might be necessary.) This line of research could not only lead to some insights about how vocational education interacts with the labor market, it might also help any redesign of the crosswalk.

4. As the Perkins Act moves vocational education from a model that emphasizes specific occupational training (Model 1), to one that emphasizes broader occupational preparation (Model 2), broader measures of "relevance" need to be developed. Currently, there is a great deal of research and discussion on different means of measuring and assessing school outcomes. The National Assessment should plan its activities to take advantage of this work. Because of its explicit focus on the skill needs of the workplace, the work of the Secretary's Commission on Achieving Necessary Skills might be particularly relevant.

5. Also as a result of increasing emphasis on Model 2, measures of labor market outcomes will be an increasingly important tool for assessing the relevance of vocational education. Although there are many thorny methodological problems with this line of research, progress can be made. The National Assessment can help confront those problems both methodologically and by working to improve the available data.

6. Finally, as a way to begin considering the merits of the third model—vocational education as the basis for broad educational reform—the National Assessment should develop some pilot projects that would examine the relevance of reformed vocational education as preparation for baccalaureate education in 4-year colleges.

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8

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Occupations and Earnings of Former Vocational Education Students: Research Design Issues

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The Carl D. Perkins Vocational and Applied Technology Act of 1990, Sec. 403. (b)(5) requires a description and evaluation of "...employment outcomes of vocational education,...." This paper translates this phrase from the Act into a research question; describes the principal issues that must be resolved in the development of a research design to answer the question; explores the availability of data to implement the design; and lists the most important constraints that will limit the researchers' ultimate success in responding to Congress' mandate.

THE RESEARCH QUESTION

The principal research question is: **Are former vocational education students working in jobs that require the competencies they acquired through vocational education's auspices?**

Decomposing this question into its parts reveals the researcher's challenge:

- What definition of "former vocational education student" should be adopted? No one definition will meet all evaluation requirements. Multiple definitions must be adopted. These should be based on the following criteria: vocational course intensity (i.e., measures of exposure to vocational education); student achievement (i.e., measures of enrollee accomplishment from this exposure); student characteristics (e.g., member of a particular special population); institutional characteristics (e.g., secondary comprehensive, secondary vocational, community college, or community-based organization); and local area characteristics (e.g., levels of and changes in industry-specific employment).

- How can we determine whether a job requires certain competencies? It is not feasible to attempt a direct determination of required competencies. We know that skill competency requirements vary among firms that produce the same product or service. We also know that skill competency requirements are often flexible depending upon the presence of other positive or negative screening considerations. Inevitably, the evaluator will be forced to rely upon existing occupational classification schemes (e.g., the *Dictionary of Occupational Titles* and related crosswalks to other classifications).

- How can vocational education's contribution to acquired competencies be isolated? Again, the evaluator will not have any direct measure of vocational education's contribution. Attempts should be made to introduce available comparison group information to permit indirect estimates to be derived.

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EVALUATION DESIGN ISSUES

Judith Gueron, President of the Manpower Demonstration Research Corporation, recently described the evaluator's task in the following way (*Evaluation Forum*, 1991, 76):

> Much of what evaluators can do to improve the use of their 'product' in the policymaking process depends on how credible, clear, and useful evaluation information is. At bottom, we need to have a good product. Then we need to make our conclusions accessible and be able to say what they should (and should not) suggest to policymakers and practitioners.... At the early stages, we also need to be thinking about what policymakers and practitioners can use.

There is abundant evidence that the answer to the question, "Are former vocational education students working in jobs that require the competencies they acquired through vocational education's auspices," will be: Some former vocational education students are working in jobs that require competencies they acquired through vocational education auspices; some are not. The members of Congress surely seek to learn more than this by mandating a description and evaluation of employment outcomes of vocational education.

In 1994, reauthorization deliberations will include an intense review of

- the consequences of allocating federal funds based on concentrations of low-income households;
- the success of tech-prep;
- the effects of changes in state and local administrative responsibilities; and,
- the extent to which academic and vocational offerings have been integrated.

For information to be useful in 1994, the design of an employment outcomes evaluation should reflect these known needs. However, this part of the National Assessment's overall research strategy should not concentrate on the 1990 Act's net impact on employment outcomes. The final National Assessment report must be submitted in 1993. Only mid-1992 employment information can be included in this report. These data cannot reflect much impact attributable to the 1990 Act.

The evaluation design should reflect well-known interest in

- training-related placement of former vocational education students;
- distinctions among type and levels of vocational education institutions;
- the importance of different concentrations of vocational education exposure;

- particular subgroups of former vocational education students (e.g., members of special populations);

- isolation of influences on employment outcomes that are protected by administrative control from the effect of external forces; and,

- the stability of findings and conclusions when different time intervals are considered.

The evaluation design should permit investigation of both unusually positive and negative outcome patterns. Advantage should be taken of any opportunity to document the consequences of change. The evaluation should not respond to the unasked question: Should there be vocational education? Instead, it should reveal under what circumstances vocational education makes a difference. Distinctions among federal, state, local and private sources of funds should be left to other parts of the overall evaluation design. Here, the primary goal should be to detect differences in the employment outcomes of former vocational education students. A secondary objective should be to trace these differences to their causal origins.

There is no consensus about what we should expect an evaluation of employment outcomes to reveal (Gustman and Steinmeier, 1980; Meyer, 1991; Stevens, 1983). If occupational skills are the principal determinant of employment opportunity, and if these skills are provided by vocational education, then we might expect to find high rates of training-related placement. But, if personal attributes and site-specific circumstances combine with occupational skills as determinants of employment opportunity, then we would expect to observe different rates of training-related placement for those with comparable skills. The research design must either choose among competing theories about what matters, or be flexible enough to permit a test of these competing theories.

This is not only an academic issue. Arbitrary training-related placement rate standards are used throughout the nation to justify life-or-death decisions about vocational education programs. The evaluation design should promise to advance our understanding of whether such standards should be applied, and, if so, how they should be managed.

Six evaluation design questions are of particular importance:

1. How should the training-related placement issue be handled, given the difficulties predecessors have had in devising a satisfactory approach?

2. Does it matter whether we use wage-rate, earnings, or compensation information?

3. Are previous and concurrent employment and earnings histories of vocational education students relevant, or will subsequent employment and earnings information suffice?

4. Are differences among institutional providers of vocational education pertinent?

5. How should unit-of-analysis choices be made?

6. What is the relative importance of knowing more group average performance versus discovery of exemplary and abysmal outcomes?

The Training-Related Placement Issue

Vocational educators have traditionally sought to determine whether a former student in a well-defined vocational specialty went to work in an equally well-defined job utilizing the specialty's skills. It is now well known that most enrollees in vocational courses do not complete a sequence of courses that constitutes a uniform specialized program. It is less well known that the pervasiveness of narrowly defined occupations is also eroding.

The evaluation design issue here is how to match vocational education exposure with employment application. Meyer (1991) uses *course utilization rate* and *skilled job course utilization rate* concepts for this purpose. The course utilization rate "... measures the share of all vocational courses taken by students that are related to jobs that they eventually obtain"; and the skilled jobs course utilization rate "... measures the share of all vocational courses that are related to the jobs that the students obtain only when those jobs require more than minimal skills...."

Meyer's approach, which is the current state-of-the-art, adopts vocational course as a practical unit-of analysis, compares each of these courses with subsequent jobs held on an all-or-nothing basis (i.e., either related or not related), and then combines these courses to derive a utilization rate.

This procedure has certain limitations. It

- masks within-course differences in the skill acquisition of individual students;
- ignores complementarities and duplication in course content, and the effects of these on student achievement;
- necessarily relies upon available vocational course and occupational classifications for matching purposes; and,
- does not distinguish between skill *relatedness*, skill *requirement* and skill *sufficiency*. A skill can be related but optional; required but not sufficient; or sufficient, which implies requirement and relatedness. Many people speak in terms of requirement, but appeal to measures of relatedness alone for accountability purposes.

Each of these features of Meyer's method limits the practical management usefulness of reported findings. For example, if a course offers required skills, but personal attributes or site-specific circumstances are overriding determinants of employment opportunity, then the expected employment outcome should be modified accordingly. This is easier to assert than to accomplish. The Job Training Partnership Act performance standards record offers a valuable lesson from which vocational educators can benefit in their own approach to an inevitably contentious topic (King, 1987; National Commission for Employment Policy, 1988; National Commission for Employment Policy, 1991). Local Private Industry Councils are urged to first determine whom they want to serve and then see how the choices they make affect expected performance. In fact, because of misunderstanding and skepticism about the criteria-specific adjustments, many of the local administrative bodies attempt to "play" the adjustments to their advantage. Substantial attention must be given to staff training and consensus building about the appropriateness of the adjustments before they are introduced. The legislative and administrative history of Florida's statewide placement-rate standard for vocational education programs offers valuable lessons for other jurisdictions (Florida Employment and Training Placement Information Program, 1991).

Another example of the limits of this method is that if either vocational course or occupational classifications are inaccurate descriptors, then the management usefulness of a knife-edge determination of related/unrelated must be questioned. Also, if within-course differences in achievement and course complementarities matter, then admission criteria and retention patterns are important.

We know that each of the hypothetical cases stated above occurs some of the time everywhere and all of the time in some places. Therefore, available vocational course and occupational classification systems must be understood before committing to a particular evaluation design. The National Occupational Information Coordinating Committee, its member Executive Departments, affiliated State Occupational Information Coordinating Committees, and their constituent agencies, have collaborated to make tremendous progress in the development of crosswalks that permit translation from one classification to another. However, it remains the evaluator's responsibility to understand how these translations among special-purpose classifications affect the interpretation of observed employment outcomes. This problem is particularly acute given the proliferation of unique vocational education program codes that followed the widespread introduction of new program approval practices that were intended to diminish duplication of offerings.

The U.S. Employment Service in the U.S. Department of Labor has appointed an advisory panel on revision of the *Dictionary of Occupational Titles*, which is to offer its recommendations in mid-1992. The evaluation design should reflect what is known about anticipated future refinements of current classifications. These changes are unlikely to affect the National Assessment evaluation per se, but they can be useful in fine-tuning the evaluation with an eye to post-assessment monitoring of employment outcomes.

Wage Rate, Earnings, And Compensation

There are two schools of thought among evaluators about the link between the importance of an outcome and the measurement of that outcome. Some argue that we measure what is important, while others say that we attribute importance to what has been measured. Money is considered by many to be a uniform measuring rod of the reward for work. This widespread agreement does not preclude disagreement about the relative importance of this measure vis a vis other rewards (e.g., job satisfaction, opportunity to continue to learn on the job, and promotional outlook). Many of today's evaluations of vocational education continue the precedent of using wage rate as an outcome measure. The merits of this practice are questioned here.

Wage-rate information alone is a poor indicator of vocational education's success. Once, in the distant past, an evaluator could multiply a self-reported hourly wage rate by an unobserved but uniform full-time work week to obtain a reasonable estimate of earnings, which in turn was a reliable proxy for the total payoff from work effort. However, because of the disintegration of the uniform full-time work week into multiple definitions of "full-time," the traditional practice of assuming a uniform work week is unacceptable. Also, as a result of collective bargaining negotiations, a growing wedge has been driven between money earnings and total compensation, which includes the cash value of nonwage benefits. Since participation in these benefits is uneven, continued reliance on the wage portion of total compensation alone compromises the accuracy of the intended measure of reward to work effort.

Wage rate is an imprecise measure. For example, a high entry-level wage might indicate many things other than a more "successful" job, including

- a straightforward measure of currently realized productivity;
- a measure of anticipated future productivity that will be realized after successful completion of on-the-job training;
- a dangerous or otherwise unattractive job;
- an opportunity that is insulated from the leveling influence of competitive pressures; or,
- a substitute for nonwage benefits.

Further deterioration of the earnings estimate emerges when increasingly common voluntary and involuntary part-time employment are factored in. Simultaneous employment in more than one job, the routine use of mandatory overtime, shift differentials, commissions, bonuses, and self-employment add to the destruction of what was once a nearly universal "transparent" outcome measure. The evaluator's task is much more complex today than it was in previous decades.

Previous, Concurrent, and Subsequent Employment

In post-World War II America, it made sense to focus on the transition of secondary vocational education students into entry-level jobs upon graduation. In 1991, many vocational education students are enrolled in postsecondary courses, which means they are likely to have previous and concurrent employment histories. This creates a number of evaluation challenges.

Many enrollees in vocational courses do not complete an uninterrupted and uniform sequence of courses that constitutes a specialty culminating in a diploma, certificate, or postsecondary degree (Stevens, 1991). New entrants into the work force, re-entrants who have been absent for some time, and those already in the work force who are renewing or enhancing their skills, are quite different from a management or policy standpoint. It is credible to argue that new entrants acquired their occupational skills in a vocational education program. This credibility is weakened when students are employed while they go to school or if the students have previously worked.

Many former vocational education students have prior and concurrent work histories. The observed employment success for former vocational education students may be an ambiguous guide for offering future admissions advice, even if employment opportunities remain unchanged. These former students may already have been employed, enrolled in vocational education courses, and then remained with or returned to the same employer or moved to a new employer. The enrollment may have been recreational or job related, and it may complement or be unrelated to previous vocational education enrollment. The evaluator must consider at the outset what uses might be made of reported information about the employment of former students.

In the face of this diversity, careful thought must be given to how the proposed evaluation design will open and close doors to collecting and interpreting data. This will require appropriate sharing of information about proposed evaluation designs among those who will be responsible for specific parts of the overall National Assessment.

Multiple Institutional Sources of Vocational Education

The growing diversity of vocational education providers parallels that of vocational education students. The nation has witnessed a progression of institutional types, beginning with worksite apprenticeships, through secondary and postsecondary public schools, to today's mix of exclusively vocational public schools, combined academic and vocational public schools, private for-profit career schools, nonprofit community-based organizations, and worksite training offered through an employer's auspices or in collaboration with an external public or private vendor.

These differences should not be overlooked in the design of an evaluation. Employment outcomes are likely to vary depending upon the vocational education provider's institutional characteristics. Some exclusively vocational settings are highly selective and prestigious; others are "dumping grounds" that are equally well known but stigmatized. Particular institutional settings reveal high concentrations of one sex or ethnic group. Some depend heavily on funding sources that impose income-eligibility criteria. These distinctions must be recognized in the evaluation design if many management and policy uses of the evaluation's findings are to be promoted.

Unit-Of-Analysis Choices

No one group, especially not the Congress, is responsible for vocational education. The evaluation product will lie untouched on the shelf if it describes vocational education in generic terms; there is no potential buyer for such a product. There are many potential buyers of an evaluation product that investigates the employment and earnings outcomes of former vocational education students in districts with concentrations of low-income households, or in communities that have experienced dramatic realignments of the local economy, or in schools with high concentrations of minority enrollees, or in vocational course sequences with concentrations of a single sex, or in vocational programs that practice competency-based certification, or in states that apply performance standards in a management oversight context, or in communities that have multiple deliverers of vocational education, etc.

A decision rule for evaluation design should be: Is there at least one identifiable management agent whose actions might be affected by the expected findings if the evaluation is undertaken in the proposed way? If the answer to this questions is no, the evaluator should go back to the drawing board. If the answer is yes, and more than one such agent can be identified, the evaluator must decide whether choices should be made among these potential consumers of the evaluation findings—can the relevance of the evaluation be improved for one or more potential users, but at the expense of other applications? This question sets the stage for introducing the last of the six design issues.

Average, Exemplary, and Abysmal Outcomes

Precise estimates of average performance are likely to be accepted with limited enthusiasm by many members of Congress. For example, there are vigorous dissenters (Swanson, 1991) from provisions of the 1990 Perkins Act that concentrate federal funds on special populations. This should alert the evaluator to the importance of being able to describe vocational education's role in preparing students in unexceptional circumstances for productive and rewarding employment.

However, vocational education is already in place and future management decisions will occur at the margins. It would be impractical to design an evaluation that would only answer the question: Should vocational education courses be offered? It is quite practical to design an assessment that is intended to discover unusual patterns of employment success or failure by former vocational education students, and to investigate these aberrations to reveal consistent correlates of this abnormal performance.

The National Assessment's principal evaluation responsibility is to the Congress. The assessment design should favor federal interests in employment outcomes. Can the evaluator detect employment patterns that offer the Congress opportunities to fine tune the federal role in vocational education? Do seemingly typical former students move on to atypical employment affiliations? If so, what can be said about the reasons for this? Among the obvious former student populations that will be of interest to the Congress in 1994 are special populations, local areas with high concentrations of low-income households, states that use explicit performance standards, and completers and early leavers in tech-prep sequences.

Credible conclusions based on these units-of-analysis will be useful to the Congress in 1994 reauthorization deliberations. Other evidence pertaining to employment outcomes in unexceptional settings will be useful in defining the tone of the debate. Credible evidence of widespread employment of former vocational education students in jobs that require the competencies they acquired through vocational education will support a positive tone. Contrary evidence, or evidence of questionable credibility, will establish a negative tone in 1994. The credibility of the evaluation's findings will depend heavily on the evaluation design's balance in permitting favorable and unfavorable evidence to emerge. The Congress will receive sufficient anecdotal evidence from vocational education's supporters and adversaries. The National Assessment evaluation design should be unassailable by either group.

The evaluator's design task is similar to that of an experienced mountain climber who confronts a previously untested challenge. There may be many possible ways to traverse the terrain, but previous experience contributes to a quick reduction of the practical number of routes to be considered. Then, the cumulative consequences of each decision at a branching point must be thought through. This strategic thinking exercise is intended to produce a preferred approach (Dixit and Nalebuff, 1991).

Finally, vocational education goals, strategies, and circumstances differ within and among the federal, state, and local management levels. The evaluation design should reflect these differences. This will help insulate the National Assessment's findings from criticism.

AVAILABILITY OF USEFUL DATA FOR EVALUATION PURPOSES

Desired data items can be listed based on the evaluation design issues that were examined in the previous section. They include: 1) individual attributes and transcript and employment history information for former vocational education students; and 2) information about local area economic conditions and changes in these conditions.

The availability of this information for the universe of enrollees in identifiable vocational education courses, concentrations of courses, and institutions will strengthen the evaluation. Appropriately chosen samples can suffice, but the adequacy of a sampling design is often difficult to convey to lay observers. In fact, the availability of information on an entire population of former students will permit the selection of different samples to determine what effect this has on reported employment outcomes.

Included among the many forces that affect employment outcomes and should be measured are job availability, qualification for the available jobs, awareness of these jobs, and willingness to accept and work in these jobs. Each of these factors is a contentious issue between vocational educators and their critics. Whenever possible, the evaluation should account for differences in these forces.

There is no nationally representative data source that contains all these data. The cost and length of time necessary to create such a data set rule this out as a viable option. Locally based followup reports are of such uneven quality that they cannot serve as a reliable basis for producing a credible report on employment outcomes for former vocational education students.

On the other hand, some of the states have taken advantage of the plunge in cost and tremendous increase in capability of automated management information systems to develop more comprehensive and standardized employment data sets. These are the National Assessment's most promising source of useful information about employment outcomes for former vocational education students.

State Employment Security Agency Data

The Deficit Reduction Act of 1984 mandated that "...employers in [each] State are required, effective September 30, 1988, to make quarterly wage reports to a State agency (which may be the agency administering the State's unemployment compensation law)..." (Stevens, 1989). Three-fourths of the states were already collecting this information at that time through State Employment Security Agencies in support of their state-administered unemployment compensation programs. Today, only Massachusetts and New York collect the required information through an agency other than the State Employment Security Agency.

Among the states that have used these State Employment Security Agency data for vocational education followup purposes are Arizona, Colorado, Florida, Kansas, Maryland, Missouri, Utah, Virginia, Washington, and Wisconsin. Two of these states, Washington and Wisconsin, have investigated former postsecondary student outcomes only (Strong and Jarosik, 1989; Washington State Board for Community College Education, 1990). To the best of the author's knowledge, Florida is the only state that maintains an automated statewide secondary and postsecondary placement information program (Pfeiffer, 1990, 1991a and 1991b). Maryland is the only state that maintains an accessible archive of the universe of State Employment Security Agency employment and earnings records, dating from 1985 (Middlebrooks and Stevens, 1990). Other states can, in principle, create a comparable longitudinal data retrieval capability.

The positive features of the State Employment Security Agency quarterly administrative data include

- comprehensive, but not universal, coverage of nonfederal employment, with exceptions that are described in the next paragraph;
- unique employer identification, and full four-digit Standard Industrial Classification code detail for each reporting employer;
- geographic location information for all single-site and some multiple-site employers who are required to report;
- total earnings reported on a quarterly basis with no ceiling cutoff; and,
- timely access (in some cases within 3 months of the end of a quarter).

The limitations of the State Employment Security Agency data include the following:

- There is no occupational information.
- There is no demographic information about the individual employees; statutory restrictions limit a State Employment Security Agency's ability to provide information about individuals, because they cannot release information to the public that permits identification of either individual employees or employing establishments.
- Self-employed individuals, commission-only off-site employees, railroad employees, federal civilian and military personnel, those employed by some philanthropic and religious organizations, and others in special exempt circumstances are not covered.
- Erroneous, late, and nonreporting by covered employers occurs.
- Reporting is state-specific, so out-of-state employment is missed.
- In all but a few states, only total quarterly earnings are reported by an employer for each employee, so it is impossible to determine whether an employee worked during the entire quarter and whether full- or part-time status is represented.
- For individuals with multiple wage-records during a quarter, it is impossible to determine with certainty whether the employer affiliations were sequential or simultaneous, although methods are available to explore this matter.
- Financial burdens and staff activity priorities limit a State Employment Security Agency's ability to respond to recurring requests for information.

The future availability of these administrative data is likely to remain subject to state-specific policies. The controlling statutory authority is at the state level, but the Unemployment Insurance Service in the Employment and Training Administration of the U.S. Department of Labor represents the federal government's interest in maintaining the fiscal and programmatic integrity of the nation's unemployment compensation system. The Department is developing a policy position with respect to the release of these administrative data. Many states have recently completed or have undertaken similar reviews of their data release practices (National Commission for Employment Policy, forthcoming).

The State Employment Security Agency administrative data are a promising source of reliable employment and earnings outcomes information that can be merged with school-based transcript information for National Assessment purposes if appropriate confidentiality requirements and cost reimbursement arrangements are made. The inability to extract occupational detail or to derive an earnings figure that can be defined in terms of a uniform time unit is balanced by the credibility of data collected by a disinterested party whose own administrative uses of the data promote reliability. Use of these data would allow the National Assessment to avoid the traditional charge by critics that "you only found the ones you wanted to find" in self-reporting by schools of training-related placements and wage rates.

Other potential sources of employment and earnings information that might be added to a merged longitudinal unit-record include

- the U.S. Office of Personnel Management (for federal civilian employees);
- the U.S. Department of Defense Manpower Data Center (for military personnel);
- the U.S. Postal Service (for postal employees); and
- other State Employment Security Agencies (for covered employees in their administrative records).

Florida's Education and Training Placement Information Program uses these additional sources of data in its current systems.

Occupational Information

There have been state-specific studies (e.g., in Arkansas, Colorado, Florida, and Utah) of the feasibility of adding occupational information to the required quarterly report of earnings by employers to a State Employment Security Agency. The state agencies resist these efforts "to make a Christmas tree" out of their core administrative reporting systems.

Establishment of Florida's Education and Training Placement Information Program followed an unsuccessful attempt to add occupational information to the quarterly wagereport with a comprehensive mailed-survey component (FETPIP, 1990). This approach, conducted on a voluntary basis and involving half of the more than 40,000 employers of former vocational education students, produced an 86 percent overall response rate in its most recent application. Industry-specific versions of the Bureau of Labor Statistics' Occupational Employment Survey (OES) codes are provided to these employers for their discretionary use in identifying the occupational status of the former vocational education students. This represents the current state-of-the-art in collecting useful occupational information for descriptive and evaluation purposes.

To the author's knowledge, no state has attempted to distinguish among the skill-related, required, and sufficiency concepts introduced earlier. It is, therefore, unlikely that the National Assessment will be able to report direct evidence about the two more exacting concepts. This is unfortunate, given Congress' interest in employment outcomes for special populations. However, inferences should be possible from evidence of differences in employment outcomes for former students who were enrolled in the same vocational education courses, with appropriate adjustment for other influencing forces.

School-Based Transcript Information

The State Employment Security Agency administrative data described in the previous section exhibit state-level uniformity, substantial comparability across states, and a high level of reliability because of their routine use in the administration of the unemployment compensation program. These features are less obvious in the world of secondary and postsecondary vocational education.

Governance of secondary and postsecondary vocational education is highly idiosyncratic. State-level management information systems are quite different. The National Assessment's evaluation design must be flexible enough to deal with this diversity without losing credibility. The credibility of findings will be strengthened if one or more statewide data sources can be identified. This will permit the use of appropriate units-of-analysis that are all subject to the same reporting requirements. This will also simplify the task of matching school-based and employment and earnings records. Credibility will inevitably be threatened by the unknown effect of variability in management information system design and use. A state that has a sophisticated statewide management information system is likely to be different in important ways from states that have not made this investment. This difference may reflect greater legislative support for vocational education, a higher degree of concern about vocational education's performance, or a response to management initiatives from within the vocational education community. Systemic differences are unlikely to be random. Unique combinations of historical circumstances, administrative personalities, and fiscal conditions molded the current array of management information systems.

Reporting systems are routinely modified, which will make it difficult to extract uniform information about multiple years of former vocational education students. This will limit the extent of which useful statements about the direction and magnitude of change in the employment fortunes of former vocational education students can be expected.

Local Economic Conditions

Some vocational educators oppose reliance on employment outcomes information. They argue that differences among areas at any given time, and within each area over time, make it impossible to interpret the outcomes information. The assessment design should respond to this concern by including appropriate controls for these differences and changes. This will necessarily be an imprecise undertaking, but the effort should be made. State Employment Security Agencies will again be an appropriate place to start the search for useable information.

CONSTRAINTS

The National Assessment's evaluation of employment outcomes for former vocational education students will be subject to the following well-known constraints:

- Multiple sources of measurement error;
- Severely limited time to compile and analyze pertinent information;
- Equally limited financial resources to support the inquiry; and,
- Confidentiality restrictions on the release of unit-record information.

Two sources of measurement error will be encountered:

- An inability to include any measure of some forces that are known to affect employment outcomes (e.g., motivation, interpersonal skills, actual knowledge absorption, and discriminatory actions that affect hiring, on-the-job training and promotion opportunities); and,
- Inaccurate measurement of some factors that are included in the analysis (e.g., matching skills acquired through vocational education and the skills required in a work setting).

There have been many previous studies of employment outcomes for former vocational education students. The National Assessment can advance what is known about this topic by taking full advantage of previously unavailable data sources and data processing capabilities. This can result in findings and conclusions that are credible, clear, and useful.

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Vocational Education and the American Job Market: An Employer's Perspective

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OVERVIEW

In reviewing the current vocational system, it has been concluded that vocational education is an invaluable form of training that can contribute greatly to federal, state, and local economies. However, it appears that the current vocational curriculum is not adequately preparing the majority of students for jobs becoming available in the workplace. Technological acceleration has changed the nature of jobs in the workplace, leading employers to require higher skill levels than ever before. Finding qualified workers to fill those jobs presents an enormous challenge because many entering and current employees do not possess the necessary academic and technical skills to keep pace with technological change. As a result, America's suffering domestic economy is failing to keep pace with international competitors.

The four sections of this paper 1) discuss the evolution of vocational education in the United States, 2) describe vocational education's relation to changes occurring in the American job market, 3) explain how vocational programs contribute to economic prosperity, and 4) present seven conclusions and recommendations and provide background information to support the recommendations.

VOCATIONAL EDUCATION: THEN AND NOW

Vocational Education: A Brief History

During the latter part of the 1800s, technical changes generated by the industrial revolution and a need to employ and educate a growing influx of immigrants paved the way for a new form of schooling which combined on-the-job training with part-time educational instruction. Private industries, town councils, and industrial associations began to organize and finance schools offering vocational-technical courses designed to train young workers in new skills and supplement their knowledge in academic subject areas. Interest in government funding for vocational education followed shortly thereafter.

The push for publicly funded vocational education programs was in part based on the belief that public education, if directly linked to the nation's economy, could play a vital role in national development. Reformers inside and outside the school system became convinced that the central task of education was to train youth for jobs and to integrate them into the occupational structure. Ultimately, this campaign led to the passage of the Smith-Hughes Act in 1917. In the decades that followed, federal funding led to the development of a vocational education system in every state, with growing emphasis on federal, state, and local economic goals.

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The next major reform in vocational education came 46 years later with the passage of the Vocational Education Act of 1963 (P.L. 88-210), which introduced training at the postsecondary level. The 1963 Act maintained support for occupational training, but also made major public policy thrusts by directing funds toward programs that addressed national concerns related to disadvantaged and handicapped individuals, to minority populations, and to gender equity.

Public sentiment toward assisting disadvantaged or otherwise hard-to-employ persons through vocational training provisions has grown since 1963. This is evidenced in the Vocational Education Amendments of 1968 (P.L. 90-576), which set aside 25 percent of the basic state grant, plus additional special funding, for disadvantaged and handicapped students. In 1984, the Carl D. Perkins Vocational Education Act (P.L. 98-524) raised these set-asides to 57 percent of the basic grant funds and expanded the identified populations to include adults who needed training or retraining, single parents, and criminal offenders.

In brief, the 1984 Perkins Act had two objectives: 1) increasing the quality of vocational education instruction by modernizing programs, and 2) expanding access to those programs for all persons, particularly those who were disadvantaged, handicapped, or otherwise underserved. The Act expired on October 1, 1989.

On September 25, 1990, President Bush signed into law legislation reauthorizing the 1984 Act, now referred to as the Carl D. Perkins Vocational and Applied Technology Act (P.O. 101-392). The new law abolishes most of the complex set-asides established under the 1984 Act and directs virtually all federal money to vocational education programs for poor and disabled students through new funding formulas. Services to localities with the greatest concentrations of at-risk populations are a primary focus. Other provisions in the new law have significant implications for business and work-force training, including

- **Increased focus on basic education skills** by targeting funds to programs which integrate academic and occupational disciplines and lead to improved worker quality;
- **New tech-prep programs**, which offer a combination of secondary and postsecondary training leading to an associate degree or 2-year certificate;
- **Increased state discretion** in designing and overseeing Perkins programs and increased accountability among vocational education service providers; and
- **Business/education partnerships for training**, which are encouraged in areas such as apprenticeships, new equipment, cash contributions to programs, teacher internships and training, and bringing representatives of business and organized labor into the classroom.

It is hoped that these provisions in the new law will help enhance the economic well-being of our nation, improve the competence of our work force, and provide meaningful work-related educational experiences for all students, particularly those who are at risk.

VOCATIONAL EDUCATION AND THE AMERICAN JOB MARKET

Employment Forecasts for the 1990s

In many respects, the 1990 Perkins Act reflects significant changes forecasted for the American job market during the 1990s. Over the next decade, technology will continue to advance and employers will demand higher skill levels than ever before.

According to the U.S. Department of Labor's Bureau of Labor Statistics (BLS), over 50 percent of jobs created between 1985 and 2000 will require some education beyond high school. Blue- collar or manual-labor positions will continue to decline, from roughly 40 percent of all jobs in 1970 to 27 percent in 2000. In the interim, demand for white-collar work will escalate. Executive, administrative, and professional specialty occupations will comprise 30 percent of all employment positions. These jobs require the highest proportion of workers with at least 4 years of college. Today, only 22 percent of all occupations require a college degree.

For the most part, changes in the American job market have been generated by advances in technology. Throughout the 1980s, our nation saw great advances in innovative technologies which, in turn, led to new products and the creation of new jobs in industries such as communications equipment, engineering and scientific instruments, and medical supplies. Developments of this kind will continue well into the year 2000.

Rapid technological change is increasing the complexity of jobs in less technical fields as well. Skill requirements are changing dramatically and increasingly require independent judgement as well as analytical and interpersonal skills. For example, in manufacturing, machinist occupations are evolving quickly from jobs involving simple repetitive motions to jobs requiring technical skills. In the service industry, secretaries are becoming information managers, bank tellers are becoming financial services portfolio consultants, and insurance claims adjusters are becoming problem analysts. In the communications industry, a basic line of voice instruments has turned into an array of systems for communicating data and imagery. Even delivery services such as Federal Express now involve a computerized tracking system employees are expected to operate and understand.

In its "Workforce 2000" study, the Hudson Institute, a public policy research center located in Indianapolis, examined the skill levels in occupations projected to grow and concluded, "the fastest growing jobs will require more language, math, and reasoning skills." The Hudson Institute data show that jobs requiring the three highest skill levels are projected to constitute 41 percent of all jobs in the future, compared to only 24 percent requiring those skill levels now. Only 4 percent of new jobs will be at the lowest skill level, compared to 9 percent of such jobs today.

Clearly, workers of the future will have to be able to adjust to changes in job requirements as the work environment becomes more technical. Whether business and industry can find qualified workers to meet the workplace demands that technology imposes is the challenge that now confronts us.

Educational Outputs and Changing Demographics Offer Little Help

There is a direct relationship between school systems and the work-force needs of employers. Increasingly, the supply of properly trained and educated workers—those able to keep pace with accelerating technological change—is diminishing relative to the need. If current trends in educational performance and projected demographic changes are not addressed, business will find it impossible to find skilled workers to fill the complex and knowledge-intensive jobs described above.

America's education system is undoubtedly in a state of deep crisis. Drop-out rates nationwide average between 10 and 35 percent and approach or exceed 50 percent in many inner-city schools. One in five adults is deemed functionally illiterate.

For students who graduate, the picture is not much brighter. Recent findings in a study by the National Assessment of Educational Progress (NAEP) show that reading and writing scores have remained virtually unchanged since students in the 4th, 8th, and 11th grades were last tested in 1984. The average reading scores of all students tested increased by less than one point on a scale of 500. The average writing scores of 8th- and 11th-graders actually declined.

The scenario does not improve in the math and science areas. Only one-half of all 17-year-olds compute well enough to use decimals and fractions, recognize geometric figures, and solve simple equations. About 4 in 10 high school students have a "moderate" understanding of science, but only 7 percent have any degree of sophisticated understanding of the subject. U.S. students rank poorly in international comparisons as well. A recent study of the math and science proficiency of 13-year-olds in Korea, Spain, Ireland, the United Kingdom, Canada, and the United States reveals that U.S. students rank last in every category except the amount of television watched daily. Another study reports that the top 5 percent of today's American math students score at the Japanese average.

Exacerbating these concerns are "noneducational" problems often associated with public schools, such as drugs, truancy, and violence. Teenage pregnancy rates have escalated; every day, 1,293 teenagers give birth. Every 7 minutes a high school student is arrested for drugs. Roughly 135,000 students carry a gun to school each day. These problems contribute greatly to growing concerns over poor work-force quality.

Dramatic demographic changes projected for the years ahead will also significantly impact the supply of qualified workers. The BLS reports that the civilian labor force will grow by 21 million or 1.2 percent between 1986 and 2000. This is compared with a 2.1 percent annual growth over the past 15 years. Other indicators are that the total youth population will decline from 43 million in 1980 to an estimated 34 million in 1996, representing a decrease of 21 percent within this decade.

BLS data also show that the composition of America's work force will be dramatically altered by the year 2000. In today's labor force, roughly 47 percent are white men, 36 percent are white women, 10 percent are minorities, and 7 percent are immigrants. Of the net new workers entering the labor force in 2000, only 15 percent will be white men. Forty-two percent will be minorities and immigrants—groups which traditionally have been the least prepared for jobs becoming available. For example, it is estimated that one in every two minority students grows up in poverty, and minority dropout rates are extremely high. These trends will severely limit the number of qualified entry-level workers joining the labor force in the years that follow.

Training Needs are Immense

Over 70 percent of today's workers will still be in the work force 10 years from now. These individuals will require training as job positions change and technology advances.

The American Society for Training and Development (ASTD) reports that 49.5 million workers, or 42 percent of the work force, will need additional training within the next 10 years to keep pace with employer skill demands. Sixteen million will need skills and technical training; 5.5 million will require executive, managerial, or supervisory training; 11 million will need customer service training; and 17 million will require training in basic skills. These figures do not include the approximately 37 million workers who will need entry-level training. Attached to these training needs is an enormous price tag for employers, who already spend over $30 billion in training, retraining, and remedial education each year.

The fact that many persons seeking entrance into the work force will lack basic and technical skills is also discouraging. A recent collaborative study by the U.S. Departments of Labor, Education, and Commerce finds significant numbers of employers who cite difficulty recruiting qualified workers. Consider the following examples:

- At Campbell-Mithun Advertising in Minneapolis, the ratio of applicants to those qualifying is 20:1 for secretaries and 10:1 for supply and mail clerks.
- Only 20 percent of persons seeking positions with Motorola can pass a 7th-grade English comprehension or 5th-grade math test.
- The percentage of applicants passing a basic math test for Chemical Bank of New York declined from 70 percent in 1983 to 55 percent in 1987.

In 1990, Towers Perrin, a New York-based management consulting firm, and the Hudson Institute released findings from a survey of 645 U.S. companies. All respondents reported recruiting difficulties in every employee category, including secretarial, skilled-crafts, technical, and professional workers. Table 1 illustrates some of the survey results.

Table 1
JOB CATEGORIES EXPERIENCING LABOR SHORTAGES TODAY
Percent of Companies Reporting Difficulty Recruiting Now

	Some Difficulty	Great Difficulty
Secretarial/Clerical	39%	9%
Skilled Crafts	35	9
Technical	51	13
Professional	50	11
Sales	29	3
Administrative	31	2
Supervisory/Management	45	3

JOB CATEGORIES WHERE LABOR SHORTAGES ARE EXPECTED IN FIVE YEARS
Percent of Companies Expecting Difficulty in Future Recruiting

	Some Difficulty	Great Difficulty
Secretarial/Clerical	32%	21%
Skilled Crafts	28	18
Technical	36	27
Professional	41	22
Sales	27	8
Administrative	35	6
Supervisory/Management	42	11

Source: Hudson Institute and Towers Perrin

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Problems concerning the growing skills gap are not exclusive to large corporations. Small businesses, which employ roughly one-half of the nation's private-sector labor force, are directly affected. Often touted as the "economic engine" of this country, America's 18 million small firms have even fewer workers to choose from during difficult economic times.

Traditionally, large corporations become more aggressive about hiring when labor markets tighten, thus limiting the pool of workers from which small firms can draw. When this occurs, small companies either become smaller or forgo expansion. There was a tremendous drop in the growth of employment among small firms during 1990. If this trend continues, the prospects for improving our economy will be bleak.

Vocational Education: A Vital National Resource

Vocational education, which currently serves over 16 million students in approximately 26,000 institutions nationwide, can be the catalyst in satisfying the skill needs of employers. There are numerous benefits to be derived from vocational education—ones that will help lead this nation into the 21st century. Vocational training programs instill in young adults skills that are in high demand by employers. The National Council on Vocational Education (NCVE) reports that over the next decade, 18 of the 20 fastest growing occupations will require vocational education. Vocational programs already prepare students for 26 of the 37 occupations the BLS predicts will account for the largest number of new jobs by 1995.

Properly structured, vocational education programs can help ensure that instructors, equipment, and curricula provide the labor-market skills needed by employers. Establishing working relationships with the private sector can also help vocational education programs remain current.

ECONOMIC PROSPERITY: HOW VOCATIONAL TRAINING CAN MAKE IT WORK

Vocational Education = Economic Development

Our nation's system of vocational education contributes directly to federal, state, and local economic development in a number of ways. Vocational education programs increase productivity by improving individuals' skills and work habits. These programs also support local and regional economic growth by providing workers with specific technical skills needed by local employers. Vocational education programs can stimulate entrepreneurship. The programs themselves can also be viewed as an industry which consumes goods and services and facilitates employment.

The American public is increasingly recognizing vocational education's link to economic expansion. The U.S. Departments of Labor, Education, and Commerce report that 81 percent of American citizens see a direct connection between a highly skilled work force and our nation's economic position in the world economy. A national public opinion poll conducted by the U.S. Chamber of Commerce's Center for Workforce Preparation and Quality Education also found a large majority of respondents perceiving a strong linkage between education and economic growth. This poll also found that 96 percent of parents with children in the schools are concerned abut educational quality. Seventy-five percent agreed that public school systems are failing to prepare students for jobs now available in the work force. Sixty percent believe that current workers will not be able to keep pace with technological changes in the years ahead.

In short, while recognition of vocational education's potential for spurring economic growth is well documented, there is some question as to whether our nation's system for occupational training is making a sufficient contribution. In fact, there are strong indications that this is not the case—that our vocational education system is not structured to meet the growing skill demands of employers. The U.S. Department of Education reports that employment projections frequently used to guide vocational curricula generally are extrapolations of past employment trends. This means that vocational education is ineffective in anticipating "turning points" in employment or training gaps in areas of emerging skill needs.

As noted previously, the lack of basic skills among vocational students cannot be ignored. It is reported that only half of all vocational students take algebra, only one-fourth take geometry, and only 2 percent take trigonometry or statistics. This is not a promising sign, especially in relation to the highly technical, scientific, and quantitative skills employers increasingly desire. Compounding the matter is the fact that over 70 percent of persons who will be working in the year 2000 are already in the work force. Many of these individuals are functionally illiterate or lack higher-level job skills. Eventually, the demand for retraining these workers to meet changing technical needs and standards will equal the demand for initial vocational preparation of youth.

Vocational education contributes to economic expansion in numerous ways. However, it appears that vocational programs are not structured to keep pace with economic change. Vocational training in basic academic and technical skills is needed for both entry-level and current workers.

Business Must Enter the Vocational Arena

Concern about economic development is encouraging business and government leaders to look at vocational education as a tool for increased prosperity. When business and vocational education leaders work together, they can produce more highly trained new workers and enhance vocational education's ability to react to changes in work-force requirements.

There are many ways for employers and educators to work together to improve students' educational and employment experiences and prospects. Variations include efforts designed and implemented locally by employers or vocational training institutions, facilitated by local chambers of commerce, supported by community-based organizations, or mandated through federal or state legislation. No matter what approach is taken, the potential advantages to business and industry, the education community, students, and society cannot go unnoticed.

Federal law already provides for business involvement in external training programs. The Job Training Partnership Act (JTPA) (P.L. 97-300) offers employers great latitude in exercising influence over local employment and job-training endeavors. The law enables business and education leaders to serve as delegates to state-level coordinating councils and to local Private Industry Council (PIC's) that put the private sector in full partnership with local government. Provisions in the reauthorized Perkins Act call for even more coordination between vocational education and the JTPA.

CONCLUSIONS AND RECOMMENDATIONS

Statistics showing a projected decline in the number of qualified entry-level workers joining the labor market, in combination with vast production in innovative technologies requiring advanced skill levels among employees, point to a skill shortage for America in the years ahead. Many large and small employers already have been affected by poor worker quality; others express fear for the future. This report points to seven conclusions about vocational education quality and related work-force needs. Those conclusions, along with recommendations for action on the part of the U.S. Department of Education's National Assessment of Vocational Education, follow.

Conclusion 1:	**For over 100 years, government and industry leaders have recognized that vocational education contributes directly to the vitality of federal, state, and local economies. The Perkins Act governing vocational education reflects strong interest in training at-risk populations and attempts to improve work-force quality through new and expanded opportunities for business involvement in vocational education.**
Recommendation:	**Commission an employer survey that examines private-sector involvement in Perkins Act services.**

Much effort must be exerted to ensure successful and effective implementation of the 1990 Perkins Act. Conducting a survey of employers to determine the extent of their involvement in programs under the Perkins Act would help serve this purpose. At the least, the survey could ascertain whether services under the new Act which specifically address the business community are achieving the purpose for which they are intended. Examples of these services include integration of academic and occupational training, the new tech-prep programs, increased accountability among local vocational education providers, federal grants for exemplary business-education job training partnerships, and chamber of commerce representation on local advisory committees and state councils. In addition, a survey of this nature would help identify major shortcomings and/or strengths in the new law and, in turn, provide direction in terms of future legislative modifications.

Conclusion 2:	**Occupations requiring at least 2 years of higher education will increase substantially over the next decade, while manual labor positions will decline. Technological acceleration will continue to change the nature of jobs in the workplace, leading employers to require higher skill level than ever before.**
Recommendation:	**Commission an annual survey that attempts to identify the skills needed by corporations of all sizes.**

National, state, and local vocational education systems can better adjust curricula to meet the skill needs of employers if they understand the scope of those needs. An employer skill-needs survey would promote such an understanding. It would also provide business, education, and government leaders with insight into the changing nature of the workplace and help identify differences in skill demands among small and large corporations. Comprehensive outreach to disseminate results of the survey, together with recommendations for modifications in vocational curricula, would ensure that workers eventually possess those skills. Surveys of this nature should also be encouraged at the state and local levels.

Conclusion 3:	**Despite improvement efforts of the 1980s, American education is in dire need of reform. For employers, deficiencies in education mean an ill-prepared work force, low productivity, and inability to compete.**

Concerns about work-force equality are intensified by demographic changes looming on the horizon.

Recommendation: **Survey state government leaders to determine the extent to which vocational education is incorporated into education reform legislation.**

State-level reform efforts can be abetted by the services vocational education institutions can provide. But state legislative and administrative leaders must first be familiar with the potential contributions of vocational programs and be given incentives to incorporate those programs into their education reform agendas. A national survey of state government leaders would help accomplish this task. It would also facilitate vocational education's inclusion in restructuring policies and programs targeted for students of all ages.

Students at risk of dropping out would benefit greatly from enhanced state-level vocational programs. Because they often do not adjust well to normal classroom environments, at-risk youth may learn better through vocational education programs in which academic training is integrated into real-world situations such as the workplace.

Conclusion 4: **Without taking action to improve the basic and technical skills foundation of workers in large and small firms, our nation's ability to maintain a competitive work force and keep up with technological advancements will diminish.**

Recommendation: **Investigate the extent to which federal vocational education programs serve the training needs of current workers.**

This report has emphasized the importance of enhancing underlying academic skills and conceptual understandings to make employees good analysts and problemsolvers. Because roughly three-fourths of citizens who will be working in the year 2000 are already in the labor force, these individuals might be considered the key to increasing our nation's productivity over the next two decades. Their lifelong training needs create yet another demand for the expansion of opportunities for worker mobility and transferrable skills through postsecondary vocational training.

A study addressing the degree to which the federal vocational education program serves adult workers is needed. Elements of this research could include: 1) the percentage of dollars expended on postsecondary vocational training, 2) the percentage of vocational education programs serving adult workers, and 3) the level of coordination between vocational education and JTPA services. The survey instrument could also be used as a vehicle to collect, evaluate, and disseminate information on the best practices in occupational training to interested parties nationwide.

Long-term benefits could be derived from such a study. Business and industry would be reminded of the importance of playing an integral role in governmental training and retraining programs. In turn, this would help ensure that training curricula do not become outdated for current or future employment needs.

Conclusion 5: **Vocational education is a valuable form of training that effectively prepares people for many skilled occupations.**

Recommendation: **Investigate whether state and local programs are meeting the needs of vocational education graduates.**

National leadership is needed to dispel common myths about vocational education as providing services only to disadvantaged or otherwise hard-to-employ youth and adults. The first step in accomplishing this endeavor is to collect comprehensive data on the success rates of state and local vocational programs. Success can be measured by determining whether vocational education systems are meeting the needs of workers who graduated from vocational training institutions.

The success rate of state and local vocational education programs should be ascertained through a comprehensive employer survey that explores 1) the amount of additional training or retraining vocational graduates require, 2) graduates' wage levels and work habits, 3) progress of vocational graduates in the job market, and 4) projected employment trends and corresponding skill requirements. Qualitative data on employer satisfaction with former vocational students should also be included in the survey instrument.

Survey results could be used to promote the benefits of vocational education. For instance, a national trade association could be commissioned to disseminate examples of students graduating from vocational programs who have excelled in various occupations and professional fields. In addition to providing a focus on the benefits of vocational education, this survey would help federal government leaders identify potential weaknesses in the current vocational system, as well as in new programs established under the new Perkins Act.

Conclusion 6: **Vocational education contributes to economic expansion in numerous ways. However, it appears that vocational programs are not structured to keep pace with economic change. Vocational training in basic academic and technical skills is needed for both entry-level and current workers.**

Recommendation: **Conduct research to identify and examine linkages between vocational education policy and economic development policy at the state level.**

Vocational education has great potential for encouraging local economic expansion and migration of new business and industry into states or localities. However, not all state governments have taken action to link vocational education with economic development policy. All too often, the process is decentralized and informal, with postsecondary institutions adjusting their curricula around local training needs with little or no direction at the state level.

A survey of state government agencies overseeing vocational education and economic development should be conducted to determine whether formal or structured linkages exist at the state level. This survey should also investigate the nature of such linkages, especially with respect to the employer's role. After survey data are collected, a nationwide exchange of model state policies and programs should be undertaken by an appropriate trade association representing business.

Conclusion 7: **By working together, business and vocational education leaders can produce more highly trained new workers and enhance vocational education's ability to react to changes in work-force requirements. While national opportunities exist through the reauthorized Perkins**

Act and JTPA mandates, much more can be done at the state and local levels.

Recommendation: **Determine the extent to which current business-education partnerships involve vocational education.**

Employers need to communicate with vocational institutions to ensure that program offerings remain current with technical changes occurring in the workplace. Mutually beneficial partnerships with vocational education effectively supplying the skills identified by business and industry should therefore be encouraged and strengthened.

A survey on the extent to which current partnership activities involve vocational education should be commissioned. Among other components, the survey should investigate the structure of these efforts. Information on whether state and local chambers of commerce play an integral role in the partnership would be especially helpful. Once the data are collected, a comprehensive dissemination effort promoting the more innovative and successful programs could be undertaken by an appropriate federal agency or trade association. Communities could model partnerships that meet their local or regional economic conditions.

CONCLUSION

The recommendations contained in this report represent an employer's views on what can be done to improve the delivery and effectiveness of vocational services and, ultimately, worker quality. Because vocational education is a multifaceted industry involving federal, state, and local governments; the business community; secondary and postsecondary education institutions; and community leaders, recommendations from other perspectives should not be overlooked. If the National Assessment were to undertake the various studies described above, vocational education might justifiably play an active role in the education reform movement of the 1990s. Given reports of an anticipated skill shortage, along with the need to improve America's competitive position in a world economy, now is the time to seriously consider the suggestions raised in this report.**

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Part 4:
General and Special Populations

Individuals With Special Needs in Vocational Education: Considerations for the National Assessment

L. Allen Phelps*

INTRODUCTION

Youth and adults with specialized educational needs will challenge the resources of the U.S. educational system in the coming decade. As Pallas, Natriello, and McDill (1989) note, the rapid growth of the disadvantaged youth population in the United States over the next decade (one-third of the school-age population will be educationally disadvantaged by the year 2020) will require considerable additional public resources. As noted in several national reports, failure to respond to this severe problem will threaten the nation's economic welfare, as well as our political and social stability (Levin, 1985).

The 1990 Carl D. Perkins Vocational Education Act acknowledges and extends the central role vocational-technical education plays in improving economic opportunities for individuals who are educationally disadvantaged, including students with disabilities or limited English proficiency and students from low-income families. Beyond these groups, the new Act also concentrates resources on serving youth who are single, teen-aged parents, individuals in correctional settings, potential dropouts, men and women entering nontraditional careers for their sex, displaced homemakers, and others who need special assistance in order to succeed in vocational education. Since the landmark Vocational Education Act of 1963, a major purpose of federal vocational education legislation has been to enhance equitable educational opportunities for the full spectrum of special populations.

While the funding set-asides for several of the special groups have been removed from the 1990 Act, several key fiscal provisions emphasize the importance of maintaining needed support services and program modifications. In the 1984 Act, provisions for individual assessment, counseling, guidance, and transitional services were required for all learners identified as disabled, economically or academically disadvantaged, or limited English proficient. In the new Act, priorities for fiscal support must be given by local schools and postsecondary institutions to sites or programs with "high concentrations of special populations." Funds can also be spent for integrating academics and vocational education to ensure that students achieve both academic and occupational competencies. In both cases, a recipient district must concentrate federal funds on programs of "sufficient size, scope, and quality as to be effective."

These new policy provisions raise significant questions in an era when special interest group concerns are overshadowed by concerns for raising the quality and effectiveness of education for all students. As these changes are implemented, the National Assessment will, in part, be a forum for debate as to whether or not special interest group concerns have been enhanced or delimited by the removal of the funding set-asides and the mandated provision of specific services.

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This paper examines three central issues in the debate: 1) effects of the flexible administrative and fiscal policy in the new Perkins Act on access and participation, 2) participation of special students in the new, "upskilled" versions of vocational-technical education (e.g., tech-prep and integrated academic-vocational education), and 3) the influence of performance standards on the equity goals of vocational education. To place these issues in an appropriate context, the paper first reviews some demographic trends and examines other federal legislation that has direct implications for evaluating vocational education programs and policies affecting special populations.

SPECIAL POPULATIONS AND THE CHANGING WORK FORCE

In the 1990 Perkins Act, "special populations" is a broadly constituted initiative. When discussing various target groups, significant differences and varied economic, cultural, and social issues complicate the policy concerns of individual groups. When school performance data are considered, we often find that the within-group differences exceed the between-group differences. Thus, it is important in policy-focused assessment to maintain a perspective which recognizes the special aspects of disability, poverty, diverse cultural backgrounds, gender differences, and age variation.

Data from the most recent National Assessment (Hayward and Wirt, 1989) and the National Longitudinal Transition Study of Special Education Students (NLTS) (Wagner, 1991) indicate that 96 percent of disabled students took at least one vocational education course during high school. On average, disabled students took slightly more vocational coursework than their nondisabled peers: Disabled students earned an average of 5.2 vocational credits, compared to an average of 4.0 for nondisabled students. However, there are wide variations in the vocational participation rates of different subgroups of disabled students, with some groups showing relatively low rates of participation. For example, only 49 percent of multiply handicapped, 57 percent of emotionally disturbed, and 55 percent of visually impaired students took at least one vocational course. While these students represent small segments of the disabled population in comparison with learning disabled and mentally retarded students, they too must be served if we are to meet the federal goal of providing *all* handicapped students with appropriate education, including occupational preparation.

While the enriched forms of vocational education described in the new Act appear to be appropriate for all youth and adults if they are to succeed in technology-intensive workplaces, caution is urged when examining the effects of these programs upon individuals who come from varied cultural backgrounds and have different cognitive abilities. Perhaps the biggest challenge confronting vocational educators is providing students from increasingly diverse ability levels with competencies and skills that are within their reach intellectually and that enable them to participate fully in technology-intensive, teamwork-oriented, and problem-solving workplaces.

A number of recent reports and studies have documented the growing diversity found among the nation's work force entrants. Johnston and Packer (1987) note that as the nation moves toward the year 2000, the work force will grow slowly and will become older, more female, and more disadvantaged. Nonwhites will comprise 29 percent of the new work force entrants, twice their current share. Approximately 600,000 legal and illegal immigrants annually are likely to enter the United States; two-thirds will enter the labor market.

Perhaps more importantly, vocational education programs will be confronted with special students who have severe and intensive problems. The National Educational Longitudinal Study of

1988 (NELS 88) offers a frightening portrayal of the at-risk factors found among students who are scheduled to graduate from high school in June 1993 (Hafner, Ingels, Schneider, and Stevenson, 1990). It includes the following:

> Forty-seven percent of the class of 1993 have at least one of the following risk indicators (20 percent have two or more indicators):
>
> 1. Live in a single-parent family
> 2. Family income is less than $15,000
> 3. Stay at home alone for more than 3 hours daily
> 4. One or both parents are without a high school diploma
> 5. Have a sibling who dropped out of school
> 6. Have limited proficiency in English

Vocational educators will be challenged to serve more intensely disadvantaged students than in the previous 25 years of federal interest in special groups. Documenting the efficacy of vocational education programs and collaborative efforts with other social and educational programs serving students from inner-city, economically depressed areas will be particularly crucial to the continuation of federal support for vocational education in future reauthorizations.

Critics of vocational education have often cited the fact that it has little impact on the dropout rate or on providing significant economic benefits for minorities or women. However, the NLTS recently has documented more clearly the retention effects of secondary vocational education programs for students with disabilities. This study collected comprehensive data on 8,000 special education students who were between the ages of 13-21 during the 1985-86 school year and who either were or had been in special education programs. Data were collected in 1987 and 1990. (An overview of the NLTS is appended.) In a recent report, Wagner (1991) noted:

> Participation in secondary vocational education is one educational intervention that appears to hold potential for positive school performance, as well as positive post-school outcomes. Across several in-school and post-school outcomes, students enrolled in occupationally oriented vocational education were significantly more likely than nonparticipants to register positive outcomes, independent of the characteristics of the students who enrolled. Students who took occupationally oriented vocational courses had significantly lower absenteeism from school and a significantly lower probability of dropping out, when demographic and disability differences were controlled. Independent of its effects on students' decisions to drop out, having had vocational training was significantly related to a higher likelihood of finding a paid job and of attending a postsecondary vocational school in the early years after high school.

Regrettably, the participation data reveal that only 56 percent of the students with disabilities were enrolled in vocational education during their most recent year in high school.

Recent Federal Legislation

In the past year, two significant pieces of federal legislation have been enacted pertaining directly to the education and employment of persons with disabilities. Both the Americans with Disabilities Act (ADA) of 1990 (P.L. 101-336) and the Individuals with Disabilities Education Act (IDEA) (P.L. 101-476) will require vocational-technical education programs to expand their services for youth and adults with disabilities.

The ADA gives greatly expanded civil rights protections to disabled persons in private sector employment (by 1994, to include firms with 15 or more employees), all public services, public accommodations, transportation, and telecommunications. The ADA definition of a disabled person is used in the new Perkins Act, which will expand the types of disabilities needing to be accommodated beyond those traditionally served in special education programs. The definition is comparable to the one used in vocational rehabilitation programs and includes all persons with physical or mental impairments that substantially limit the individual in work and other related life activities. Persons with mental illness and heart disease will now need accommodation in vocational-technical programs. In addition, the requirements for employers to provide reasonable accommodation in hiring persons with disabilities establish important opportunities for vocational education programs to model the types of adjustments and adaptations that can be made, thus illustrating the viability of employing individuals with different types of disabilities. Implications are also present for expanding the job and career placement services provided by vocational-technical programs. Such services need to ensure that individuals with disabilities are assisted fully in their search for employment.

The IDEA redefines the federal assurance of a "free and appropriate education" for every disabled child 3-21 years of age. An appropriate education now encompasses transitional services, which are to be included in the individualized education programs of students between the ages of 16 and 21. Transitional services are defined as

> ...a coordinated set of activities for a student, designed within an outcome-oriented process, which promotes movement from school to post-school activities, including postsecondary education, vocational training, integrated employment (including supported employment), continuing and adult education, adult services, independent living, or community participation. (Sec. 1401)

With these new provisions, parents and others will see secondary vocational education programs as increasingly important for all disabled children prior to their graduation from high school. The progress that has been made in steadily increasing the number of students with disabilities served in vocational programs must be maintained.

PARTICIPATION AND ACCESS

Several significant changes in the Perkins Act are likely to affect the participation of special-needs groups. In the reauthorization debates and hearings, critics argued that the removal of the matching and set-aside funding provisions would seriously erode the resource base for serving this population. More generally, this change was seen by many as another indication from the federal government that equity concerns are decreasing in importance, especially in relation to the general need for reform in secondary education. Ensuring access to, and effective participation in, a high-quality vocational education program continues to be a significant goal of the legislation. However, the central assessment issues surrounding participation and access require a clear focus on the provisions of the Act that influence the delivery of programs and services.

Issues and Questions

The 1984 Act required recipients to provide a series of mandated services (including assessment, support services, guidance and counseling, and transition services) to all eligible disabled and disadvantaged students. The 1990 Act specifies the same set of services and access requirements, and requires that eligible recipients give "assurances" that these services are provided. Since state and local evaluation requirements do not include assessment of support services for special populations, it will be difficult to determine the extent to which the "paper assurances" are indeed effective in sustaining the array of specialized services and accommodations that have been developed over the past decade to support the participation of special populations.

Access to high-quality vocational education programs has been documented as enhancing employment and other post-school outcomes. Hayward and Wirt (1989) reported that in comparison with non-special population students, disabled and disadvantaged students received nearly twice as many of their high school vocational credits from area vocational centers. Area vocational center programs tend to be more occupationally specific in focus and have more up-to-date equipment than programs in comprehensive high schools. As noted earlier, Wagner (1991) finds that disabled students who enroll in occupationally specific vocational education during their last year in school are significantly more likely than disabled students who do not participate in vocational education to register positive outcomes (i.e., retention in school, employment, and further education).

Wermuth and Phelps (in press) offer a framework for specifying the components of high-quality vocational education programs for special students. This preliminary framework identifies 19 components of effective programs in five general areas. The components were derived from a detailed content analysis of several recent empirical and qualitative studies which examined vocational-technical programs serving special population students. In addition to occupationally specific instruction, other frequently cited components of highly effective programs were work experience, individualized curriculum modifications, cooperative learning strategies, and job placement and followup services.

Suggested Inquiries

Given these dimensions of the access and participation issue, the National Assessment should consider several different approaches in the upcoming study.

The local implementation studies from the earlier NAVE, which involved survey work and community-level case studies in selected states, should be considered as a baseline for the current assessment. In essence, these studies (or a subset) could be replicated to examine the changes that have occurred relative to such variables as: enrollment patterns and rates of participation for special groups, support services provided, local interagency relationships with other agencies serving these populations, expenditures per special student, post-program outcome data, and perceived problems in implementing the new Act.

Similarly, the National Assessment may want to consider a study which would examine the needs assessment data and initial local plans compiled by a random sample of high schools, postsecondary institutions, and other eligible recipients in selected states. Such an inquiry would reveal the various strategies used by local administrators responsible for formulating and implementating the federal/state program at the local level.

Developing an understanding of how increased local responsibility for program improvement and equity manifested itself in the early stages of the Perkins Act is crucial. The proposed study would begin to describe the local interpretations involved in selecting programs that were of sufficient size, scope, and quality to be included in the local application. This study could also reveal the plans for sustaining provision of support services for special students, depending upon the guidelines given to eligible recipients for preparing their local applications. (Much of the ambiguity surrounding this issue is attributable to the lack of specificity and clarity in the Act and the lack of regulations prior to the first submission date for the state plan. Whether or not the equity provisions apply to all vocational-technical education programs operated by an eligible recipient was debated intensely during the negotiated rule-making process.)

Finally, a careful analysis of local applications in selected states would reveal the extent to which all schools and postsecondary institutions are receiving federal funds for improving services to special groups. The new requirements for minimum grants of $15,000 (secondary) and $50,000 (postsecondary) may be restricting access to larger communities and to programs for which consortia are formed. Special needs populations residing in small towns and rural communities may be disproportionately affected.

The NELS 88 study offers an excellent opportunity to examine the extent of participation by special students in high school vocational education programs. In 1990, the NELS cohort was in 10th grade; many of the students will be seniors in 1992. If the timelines for releasing these data are expedited, it may be possible to use this data base to ascertain how much and what types of vocational education were taken by special population students during their early high school years. Comparisons to the sophomore cohort of the High School and Beyond/1980 students could be useful in determining the trend lines relative to vocational education coursetaking.

The national longitudinal studies of Chapter I students and the NLTS are other data sources that should be examined. These data sources could be useful in establishing trends in access and participation, as well as student outcomes derived from programs where various combinations of support services were provided at different levels of intensity.

To date, the issue of personal value and meaning of vocational-technical education for youth and adults with special needs is largely unexplored. The experiences and lives of disabled and minority youth are distinctly different in many respects from those of able-bodied whites. Understanding how individuals from these groups view the relevance of vocational education is important from a policy perspective. There may be cultural and other types of inherent, socially ingrained biases that limit participation of certain students in vocational-technical education.

The National Assessment should consider funding a qualitative study which would examine a cross section of 75-150 youth and adults to gain insight regarding their perceptions of the nature of work and the requisite educational requirements, the stereotyping and tracking aspects of enrolling in vocational education, the role of vocational education in preparing individuals for work, the aspects of vocational education that contribute to general education (e.g., family and consumer skills, technological awareness), and other culture-related or disability-related influences. If the sample were divided between youth and adults who had and had not participated in vocational-technical education, some interesting comparisons could be made regarding how vocational education is viewed from various personal-social-cultural perspectives. The findings would be useful in shaping federal policy that would reflect the unique considerations and needs of individual groups rather than maintain the broad set of policy instruments currently used.

PARTICIPATION IN UPSKILLED VOCATIONAL EDUCATION

The 1990 Perkins Act is clearly focused on providing an enhanced set of competencies and outcomes. As the preamble to the Act indicates, vocational education programs need to center efforts on building a world-class work force. The more advanced and sophisticated skills recommended in several recent studies (e.g., Kane et al., 1990 and Carnevale et al., 1990) emphasize the need for all vocational-technical education graduates to acquire higher levels of problem-solving and creative-thinking skills, scientific and technical knowledge, teamwork skills, and leadership capacities.

The tech-prep and integration of academic and vocational education elements of the Act have drawn significant national attention from both the education and business communities. These new thrusts have been described by many as the "new, reformed" version of vocational education. In both of these initiatives the clear expectation is that students must acquire core academic knowledge in communications, math, and science related to the technical subject area. As the academic rigor of vocational-technical programs is enhanced, the matter of providing equitable opportunity for individuals with disabilities and disadvantages becomes a paramount concern.

Issues and Questions

Traditionally, many adults with special needs have been employed in entry-level, low-skilled, and low-wage occupations in the service industry (e.g., food service, building maintenance, and household services). Hence, societal expectations often suggest that it is appropriate for special students to be prepared solely for these low-wage occupations. Contrary to popular belief, recent studies have begun to indicate that special students are capable of succeeding in the full range of occupational careers. Hayward and Wirt (1989) report that only 12.6 percent of vocational credits earned by disabled students were in the service occupations noted above. Similarly, only 13 percent of the vocational credits earned by academically and economically disadvantaged students were in the service occupations. Both of these figures compare favorably with the 9 percent of vocational education credits earned by nondisabled and advantaged students in these service occupations.

To ensure that individuals with special needs are given full opportunity to participate in the work force, it is crucial that they have access to individually appropriate, demanding vocational-technical programs leading toward occupations which provide good earnings potential and advancement opportunities. Highly specialized instructional strategies will be needed to ensure that students from all ability levels have the opportunity to succeed in vocational education.

As special-needs students' participation in the full range of occupations increases, societal expectations may change. For example, parents of learning disabled, mentally retarded, and academically disadvantaged students who become aware of occupational opportunities in fields such as fiber optics and waste water technology may change their views of "appropriate" education for their children.

Suggested Inquiries

Obviously, studies of state and local implementation which are undertaken by the National Assessment should examine the level of participation by special population students. Educational and employment outcomes for students in these programs should also be examined to ascertain the extent to which outcomes are different for individuals with special needs, such as those who are physically disabled or are limited English proficient. This issue is of increasing concern as the current literature describing these upskilled programs is being expanded, with little mention of how curriculum modifications are made and support services are provided for students with different learning needs. Essentially, any efforts by the National Assessment to assess the implementation, quality, and impact of these programs should also consider the matter of equitable opportunities.

The 1990 NLTS data base could be analyzed to examine the 3-year (1987-1990) educational and employment experiences of students with disabilities. It would be interesting to track the course work and employment of students who have left high school to determine the degree to which students are integrating their high school vocational education courses with related employment and postsecondary course taking.

Over the past two decades, the federal government has supported a number of postsecondary and higher education programs to serve disabled students (e.g., National Technical Institute for the Deaf) and disadvantaged youth (e.g., Upward Bound). A series of papers might be commissioned to examine the recent research and evaluation studies from these programs with the purpose of identifying specific attributes from successful programs that could be replicated in postsecondary vocational-technical education. Such analyses might reveal the extent to which internships, experiential learning, career counseling, support groups, tutorial services, and other interventions are related to program completion. With the expanded participation of special population students in community and technical colleges, it becomes increasingly important to develop policies and programs to help ensure that these students complete their programs.

EFFECTS OF PERFORMANCE STANDARDS ON EQUITY GOALS

The current national interest in improving accountability in public education will certainly not bypass vocational-technical education. However, the "upskilling" of vocational-technical education and the establishment of performance measures for use in evaluating programs coincide in this legislation to raise a series of crucial questions.

Issues and Questions

The most significant issue from a policy standpoint is the "creaming" question: If employment and learning-gain outcomes (as required in Section 115) are set sufficiently high to meet industry standards, will disincentives be created for serving special population students? If performance measures do not encompass equity and access concerns, little attention is likely to be given to serving these individuals. Hoachlander (1990) has suggested that, in addition to learning and labor-market measures, access indicators be adopted as performance measures for districts or programs. Access measures would include enrollment and program completion data which indicate the percentage of special population students enrolling and/or completing programs. Operating on principles of distributed equity, the percentages could be used to make comparisons with the incidence rates of special population students in the school or community populations or to determine which programs limit access for certain groups.

Evans (1988) has suggested that creaming incentives are reduced when program evaluations are based on individual trainee gains in performance. Since full discretion is given to the states and their committees of practitioners in determining performance measures, it is likely that conventional measures will be adopted initially. Generally, job placement and program completion rates are computed at the program rather than the student level. Unless access measures are adopted at the program level or value-added measures are used at the student level, it seems likely that all incentives for serving special populations in mainstream vocational-technical programs will disappear.

Suggested Inquiries

As state boards move toward planning and implementing statewide performance assessment systems as mandated in the Act, assessments should be made of attention to equity concerns. To what extent do the performance measures adopted by states reflect the intent of the Act to serve communities and schools or postsecondary institutions with high concentrations of special populations? What approaches are taken by states and local recipients to develop measures which reflect access and value-added principles? As the National Assessment examines implementation of performance measures and standards, through case studies or by collecting survey data, it is critical that these questions be addressed.

Finally, the National Assessment might support studies that would examine strategies used to implement performance assessment and investigate assessment and evaluation approaches used in highly effective dropout-prevention programs, such as the California Academies Programs. The California Academies Programs have developed a comprehensive, longitudinal student-level data base which includes information on attendance, achievement, curriculum choices, attitudes toward school and work, and work experience, as well as other data describing the performance of at-risk students in grades 10-12 who are enrolled in a career magnet program. During the demonstration phase of the program, comparison groups of at-risk students from similar schools also were used.

A number of evaluation studies have been developed to examine the outcomes of the program at various locations. From a policy perspective, one of the most useful assessment studies involved a cost-benefit analysis (Stern et al., 1989). After 3 years of program operation, the net savings to the taxpayers of California for the first graduating cohort of academy students was estimated to be $1.0 million to $1.3 million, or $3,500 per student, in social welfare costs. A broader understanding of the program evaluation strategies used in effective programs provides an intuitively valid basis for developing and using performance measures, and is more appropriate than simply applying the same performance measures and standards across all programs and all students.

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APPENDIX A

Overview of the National Longitudinal Transition Study of Special Education Students

As part of the 1983 amendments to the Education of All Handicapped Children Act (EHA), the Congress requested that the U.S. Department of Education conduct a national longitudinal study of the transition of secondary special education students to determine how they fare in terms of education, employment, and independent living. A 5-year study was mandated, which was to include youth from ages 13 to 21 who were in special education at the time they were selected and who represented all 11 federal disability categories.

In 1984, the Office of Special Education Programs (OSEP) of the U.S. Department of Education contracted with SRI International to determine a design, develop and field test data collection instruments, and select a study sample. In April 1987, under a separate contract, SRI began the National Longitudinal Transition Study of Special Education Students (NLTS).

In the field of research on youth with disabilities, the NLTS is unique in several respects. For many years, the research base on youth with disabilities has consisted largely of studies of relatively few youth who were in particular disability categories, in a few school districts or a single state, or in specific educational placement or treatment programs. It has been very difficult to paint a broad picture of students from this fragmented research base. With the NLTS, findings are based on a sample that is large and nationally representative. The data presented here were collected in 1987 for a sample of more than 8,000 youth who represent the national population of secondary special education students who were ages 13 to 21 in the 1985-86 school year. The sample permits us to estimate with fairly high precision many of the characteristics of youth with disabilities and their experiences in adolescence and early adulthood. Further, the sample is nationally representative of 1985-86 secondary special education students both as a whole and for those in each of the 11 federal disability categories separately. Therefore, for the first time we know what the transition experiences were for youth with mental retardation, for example, and how they differed from those of youth with orthopedic impairments or multiple handicaps.

The NLTS is also unusual in its longitudinal design. The students for whom data were gathered in 1987 are being retained in the study so that followup data can be collected about them in 1990. These followup data will enable the estimation of trends in experiences as youth age. For example, we will be able to describe the movement in and out of jobs and in and out of school that often characterizes youth in their early adult years.

Finally, the NLTS is extremely broad in scope, gathering information on a wide range of characteristics, experiences, and outcomes of youth with disabilities, including the following:

- Individual and family characteristics (e.g., demographics, disability-related characteristics).
- Independent functioning (e.g., residential independence, financial independence, functional abilities).

- Social experiences (e.g., belonging to school or community groups, socializing with friends).
- School programs (e.g., courses taken, support services provided, educational placements).
- School characteristics and policies (e.g., type of school attended, policies related to mainstreaming, programs available for special education students).
- School achievement and completion (e.g., grades received, absenteeism, dropout/graduation behaviors).
- Employment characteristics (e.g., rates of employment, job types and duration, wages).
- Postsecondary education participation in vocational schools and 2-year and 4-year colleges.
- Services provided by the school and other sources (e.g., job training, physical therapy, counseling).
- Parental expectations for youth in the areas of education, employment, and independence.

The breadth of scope provides the most comprehensive picture yet available of youth with disabilities during adolescence and early adulthood.

Study Components

The NLTS has four major components:

- **The Parent/Guardian Survey**. In the summer and fall of 1987, parents were interviewed by telephone to determine information on family background and expectations for the youth in the sample, characteristics of the youth, experiences with special services, the youth's educational attainments (including postsecondary education), employment experiences, and measures of social integration. Parents rather than youth were selected as respondents for the first wave of data collection because of the need for family background information and because, with most students still being in secondary school and living at home, parents were believed to be accurate respondents for the issues addressed. A survey will be conducted in the fall of 1990, when youth will be interviewed if they are able to respond.
- **School Record Abstracts**. Information has been abstracted from students' school records for their most recent year in secondary school (the 1985-86 or 1986-87 school year). This information relates to courses taken, grades achieved (if in a graded program), placement, related services received from the school, status at the end of the year, attendance, IQ, and experiences with minimum competency testing. In the

second wave of data collection in 1990, secondary school transcripts will be sought for all youth who were in secondary school at any time since the 1986-87 school year.

- **School Program Survey.** Schools attended by sample students in the 1986-87 school year were surveyed for information on enrollment, staffing, programs and related services offered to secondary special education students, policies affecting special education programs and students, and community resources for the disabled. A similar survey will be conducted in 1991 for youth still in secondary school in the 1990-91 school year.

- **Explanatory Substudies.** Studies involving two subsamples of youth have looked in greater depth at 1) students' secondary school programs (the school program substudy), 2) the patterns of transition outcomes achieved by youth who were out of secondary school (the exiter substudy), and the relationship between school experiences and outcomes. Substudies were conducted in 1989 and 1990.

The NLTS Sample

The NLTS sample was constructed in two stages. A sample of 450 school districts was randomly selected from the universe of approximately 14,000 school districts serving secondary (grade 7 or above) special education students,[1] which had been stratified by region of the country, a measure of district wealth involving the proportion of students in poverty (Orshansky percentile), and student enrollment. Because not enough districts agreed to participate, a replacement sample of 178 additional districts was selected. More than 80 state-supported special schools serving secondary-age deaf, blind, and deaf-blind students were also invited to participate in the study. A total of 303 school districts and 22 special schools agreed to have their students selected for the study.

Analysis of the potential bias of the district sample indicated no systematic bias that would have an impact on study results when participating districts were compared to nonparticipants on several characteristics of the students served, participation in vocational rehabilitation programs, the extent of school-based and community resources for the disabled, the configuration of other education agencies serving district students, and metropolitan status (see Javitz, 1990 for more information on the LEA sample). Bias may exist, of course, on factors for which data were not available for such comparisons.

Students were selected from rosters compiled by districts, which were instructed to include all special education students in the 1985-86 school year who were in grades 7 through 12 or whose birthdays were in 1972 or before, whether or not they were served within the district or outside the district (e.g., in a state-supported residential school). Rosters were stratified into three age groups

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[1] The 1983 Quality Education Data, Inc. (QED) data base was used to construct the sampling frame. QED is a private nonprofit firm located in Denver, Colorado. Special education cooperatives and other special service units were not sampled directly (83% of special education students are served directly by school districts; Moore et al., 1988). However, instructions to districts for compiling student rosters asked districts to include on their listing any students sent from their district to such cooperatives or special service units. Despite these instructions, some districts may have underreported students served outside the district.

(13 to 15, 16 to 18, over 18) for each of the 11 federal disability categories and youth were randomly selected from each age/disability group so that approximately 800 to 1,000 students were selected in each disability category (with the exception of deaf-blind, for which fewer than 100 students were served in the districts and schools included in the sample).

In part because of the time lapse between sample selection and data collection, many students could not be located at the addresses or telephone numbers provided by the schools. Of the 12,833 students selected for the sample, about one-third could not be reached by telephone for the parent interview. (For more than half of these, addresses and telephone numbers were not provided by the schools/districts from which they were sampled.) This relatively high rate of inability to reach sample members confirmed the importance of including in the NLTS a substudy of nonrespondents to determine whether those who were reached for the telephone interview were a representative sample of the population to which the study was intended to generalize. To identify whether bias existed in the interview sample, interviewers went to 28 school districts with relatively high nonresponse rates to locate and interview in person those who could not be reached by telephone. Of the 554 sought for in-person interviews, 442 were found and interviewed, a response rate of 80 percent. A comparison of telephone interview respondents with in-person interview respondents showed that the telephone sample underrepresented lower-income households. The sample was reweighed to adjust for that bias, as described in the next section.

Of the 10,369 sampled students for whom addresses or telephone numbers were provided by schools or districts, some portion of the needed data was collected for 84 percent, the response rates for individual components of the study were as follows:

	N	Response Rate
Parent interview	7619	71%
School records	6241	60
School survey	6672	64

Recommended Directions: (1) The Effects of Flexibility on Delivery of Services to Special Populations and (2) Participatory Planning

Carolyn Maddy-Bernstein*

In recent years, the most critical issues concerning vocational programs for special populations have centered on access and quality. Indeed, the primary contributing factors in reauthorizing the Carl D. Perkins Vocational Education Act of 1984 were findings of the National Assessment of Vocational Education (Hayward and Wirt, 1989) that serious problems exist in those two areas. While those issues continue, two additional issues have emerged as a result of the 1990 Perkins Act: 1) the effects of the new state and local flexibility on delivering services to special groups, and 2) participatory planning.

EXAMINING THE IMPACT OF INCREASED STATE AND LOCAL FLEXIBILITY

The set-aside funds for students with disabilities and students who are disadvantaged contained in the Perkins Act of 1984 have been removed by the Carl D. Perkins Vocational and Applied Technology Act of 1990. The new legislation requires recipients to channel funds to areas with the greatest concentration of special populations and the highest level of economic need. Although nationally only 10 percent of the total budget for vocational education comes from Perkins funding, the set-aside issue has sparked much debate. Many vocational special-needs professionals predict that removal of set-asides from the legislation will result in a reduction of services to special groups. Other vocational educators believe this new flexibility will enhance services to the most needy. The National Assessment researchers will have to address the issue of which groups are served and which are not. A related issue concerns students who traditionally have required more intensive services (e.g., students with mental disabilities). Given the recipients' new flexibility to determine who will receive what services, what assistance will those who require more intensive services receive? Will students who are easier to serve receive the lion's share of assistance?

In order to monitor the services targeting special populations, Congress stipulated that each state's administrators should review the local plans (or a sample of them) of 1) programs for students with limited English proficiency, 2) Chapter 1 of Title 1 of the Elementary and Secondary Education Act of 1965 (disadvantaged children), and 3) Part B of the Education of the Handicapped Act. Evidence is needed to determine the extent and impact of their contribution (Section 111).

The purpose of the legislation is clearly to serve areas with the greatest concentrations of special populations. Yet it would be interesting to determine the impact of the lack of federal funds on vocational services to special populations in less-populated geographic areas (e.g., rural areas) who do not qualify for assistance under the new formula. Is there evidence of loss of resources? Are states channeling funds to support programs in rural areas? Central to this issue is the amount of funding: Are the appropriated funds adequate to accomplish the congressional dictates or has Congress mandated an impossible mission?

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Services to Special Populations

Required services to special populations are extensive at both the state and local levels. State plans must include assurances that special populations will have equal access to (Section 118):

- recruitment, enrollment and placement activities, and
- the full range of vocational education, including apprenticeship programs.

State assurances specifically addressing the needs of students with disabilities include guarantees that [Section 118(a)]:

- vocational education will be provided in the least restrictive environment;
- they have the same rights and protections as students are entitled to under the Education for the Handicapped Act (now the Individuals with Disabilities Education Act);
- the student's vocational education plan will be coordinated by representatives of special education, vocational rehabilitation, and vocational education; and
- monitoring will take place to determine if there is consistency between the Individualized Educational Plan (IEP) and the program they are receiving.

States must also provide assurances that students who are disadvantaged and those who have limited English proficiency will have access to the "most integrated setting possible" [Section 118(a)(4)].

States must provide an assurance that prior to entering the 9th grade (or prior to whatever time vocational education is first taught), students who are members of special populations and their parents must receive information on [Section 118(b)(1)]:

- opportunities in vocational education,
- eligibility requirements to enroll,
- courses,
- available services,
- employment opportunities, and

- placement.

Finally, the states must assure that this information will be offered in a language the students and families understand [Section 118(b)(3)].

In addition to the state assurance, local recipients of Perkins funds must provide assurances that they will [Section 118(c)]

- provide assistance to special populations to help them enter vocational education programs;
- assist in providing students with disabilities the transitional services required under the Individuals with Disabilities Education Act (IDEA);
- provide supplemental services including modification of curriculum, equipment, and the classroom; supportive and instructional aids;
- provide career guidance and counseling services by professional counselors and teachers; and
- provide counseling and instructional services to facilitate their transition to work or further education.

The degree of state and local compliance to these assurances will be a good measure of how well the 1990 Perkins Act is implemented. The National Assessment's investigation will have to analyze the extent to which these assurances are being implemented and the impact they are having.

EXAMINING THE IMPACT OF PARTICIPATORY PLANNING

A new provision of the 1990 Perkins Act requires states to develop more public participation. As in the previous law, the new legislation mandates that states conduct public hearings to provide individuals or groups the opportunity to make recommendations concerning their state's plan for vocational education. A summary of the public's recommendations with the state board's responses is to be submitted with the state plan to the U.S. Department of Education (Section 113). The legislation also states:

The State Board shall:

1. establish effective procedures, including an expedited appeals procedure, by which parents, students, teachers, and area residents concerned will be able to directly participate in state and local decisions that influence the character of programs under this Act affecting their interests; and
2. provide technical assistance and design such procedures to ensure that such individuals are given access to the information needed to use such procedures. [Section 118(d)]

The degree to which states comply with these mandates will need to be scrutinized. According to recent information gathered by Dr. Carol Kochhar (personal communication, March

1991) of the Department of Teacher Preparation and Special Education at George Washington University, there are a number of irregularities occurring nationally in the initial steps to implement the 1990 Perkins Act. She notes irregularities in hearings due to poor timing of notification about the hearings (e.g., notice of the hearing appeared 3 days after the hearing took place; notification appeared in obscure places in the newspaper) and insufficient and inaccurate information given the public during the hearings.

To ensure that parents, students, members of local school boards, and representatives of institutions of higher education, as well as school personnel, be included in the planning process, Congress mandated that representatives of each of these groups be designated as members of the State Committees of Practitioners [Section 512(a)]. The National Assessment must determine the effectiveness of the procedures established by various state boards to encourage participation of parents, students, and others. Evidence of the level and the benefits of participation by each group will need to be investigated.

OTHER CONSIDERATIONS

In passing the Carl D. Perkins Vocational and Applied Technology Act of 1990, Congress has departed from the 1984 Perkins Act in a number of ways. Through the legislation, Congress has taken a giant step toward restructuring education while simultaneously bringing vocational education into the movement's forefront. Thus, the 1990-1994 National Assessment must not only gather data for comparison with findings of the previous NAVE (Wirt, Muraskin, Goodwin, and Meyer, 1989) but also must research the effects of several new provisions of the legislation (e.g., tech-prep, integration, performance standards) on special groups.

One case in point is the effect academic and vocational education integration programs have on special populations. Grubb (1991) reports several models of integrating vocational and academic education. Are some models of integration more beneficial than others? Do some special groups benefit more? less? Similarly, do special populations have access to tech-prep programs? What are the enrollment rates? Are they receiving supplemental services such as career information and guidance to help them enroll in tech-prep programs?

If Congress is to be guided by the National Assessment findings in 1994 as it was in 1989, it is imperative that Congress and the nation obtain the most accurate and comprehensive data possible on each of these issues and on each of the targeted populations.

The Targeted Populations

Unfortunately, many vocational educators feel that the 1990 Perkins Act has ignored the "regular" student by targeting special populations. In reality, the special groups addressed by the legislation include much of the nation's general population and certainly a large part of the nation's new workers. The legislation defines "special populations" as (Section 521)

> ...individuals with handicaps, educationally and economically disadvantaged individuals (including foster children), individuals of limited English proficiency, individuals who participate in programs designed to eliminate sex bias, and individuals in correctional institutions. [Section 521(31)]

In addition to the above, the legislation also includes assistance to

- Criminal offenders (including youth and juvenile offenders);
- Persons incarcerated in a "correctional institution";
- Disadvantaged persons (individuals who have economic or academic disadvantages and who require special services and assistance to enable them to succeed in vocational education programs);
- Displaced homemakers (any adult who has worked primarily without remuneration to care for the home and family, and for that reason has diminished marketable skills; has been dependent on public assistance or the income of a relative but is no longer supported by that income; is a parent whose youngest dependent child will become ineligible to receive assistance under the program for aid to families with dependent children; or is unemployed or underemployed and is experiencing difficulty in obtaining any employment or suitable employment, as appropriate);
- Economically disadvantaged families or individuals;
- Individuals with handicaps; and
- Single parents (unmarried or legally separated with custody [or joint custody] of a minor child, or pregnant).

The legislation is obviously geared toward very large segments of our citizenry. Vocational educators must not fail to grasp the tremendous need of the nation to prepare all potential members of its work force. The perception that "special populations" include only those who have severe mental disabilities must be dispelled. The National Assessment's research must emphasize the kinds and numbers of people who fit into these special groups to help dissipate these myths.

RECOMMENDED RESEARCH QUESTIONS

Many believe the future of vocational education's national funding may hinge on how well the 1990 Perkins Act is implemented. If the National Assessment's 1994 findings are to be useful to the Congress, it is imperative that the questions which drive the assessment's research projects be tied directly to the major mandates of the law. The following are recommended questions concerning 1) the effects of state and local flexibility in determining services to special populations, and 2) increasing participatory planning:

- To what extent are each of the defined special populations being served?
- To what extent are areas with greatest concentrations of special populations being served?
- (a) To what extent are special populations being served in areas of greatest economic need? (b) To what extent are special populations being served in other geographic areas?

- To what extent are special populations enrolled in integrated vocational and academic programs? Are some models of integration of vocational and academic education more effective for special populations than others?

- What services are students with special needs receiving to help them enroll in tech-prep programs?

- (a) How have states differed in their vocational education delivery systems for special populations? (b) Are exemplary delivery systems emerging? (c) Are cost-effective delivery models emerging?

- Are programs receiving funds of the size, scope, and quality to be effective?

- (a) How well are states complying with the Section 118 assurances? (b) How well are local recipients complying with the Section 118 assurances?

- What is the level of participation of state-level personnel outside of vocational education (i.e., administrators of EHA, Chapter I, and LEP programs) who are required to review local plans?

- How well do states announce and conduct hearings on the 1990 Perkins Act?

- What is the level of parent, student, and other non-school personnel participation in the State Committees of Practitioners?

Data Sources

The former NAVE research (Hayward and Wirt, 1989) centered on access and quality of vocational programs for students with disabilities and students who are academically disadvantaged. While the current National Assessment will need to compare its findings to those of the earlier study, a broader agenda is necessary. Each of the special groups enumerated in the legislation will require investigation. The legislation itself is wider in scope than the previous law, and includes new provisions such as tech-prep programs and integration of academic and vocational education. Furthermore, the removal of the 1984 Perkins Act set-aside funds for people with disabilities and those who are disadvantaged has resulted in increased flexibility for states and local recipients in delivering services to special populations—another new area for the National Assessment's attention.

The National Assessment researchers will want to review available data sources before launching their own investigations. Among the current research projects being conducted by the National Center for Research in Vocational Education (NCRVE) at the University of California, Berkeley, is the *Tech-Prep for Special Populations* project. Through this project, researchers at Virginia Tech University (an NCRVE subcontractor) are examining the practices and processes of tech-prep programs, especially as they relate to special populations (Hoerner, Clowes, and Impara, 1991). An NCRVE project in progress at the University of Minnesota (Mortimer, 1991) centers on the investigation of vocational education for special populations (i.e., economically disadvantaged).

An additional source of information is the recently published report, *The Benefits of Secondary Vocational Education for Young People with Disabilities: Findings from the National*

Longitudinal Transition Study of Special Education Students (Wagner, 1991). Some other data sources National Assessment researchers will want to review are

- state plans for vocational education;
- local applications for Perkins funds;
- national, state, and local economic information;
- information from the state departments of education on the numbers and locations of students with disabilities and students who are disadvantaged;
- transcript data;
- interviews with appropriate personnel;
- the former NAVE findings;
- National Longitudinal Transition Study of Special Education; and
- ongoing state followup studies of former students enrolled in special education (e.g., Iowa, Florida).

(See appendix for information on additional data sources.)

Anticipated Problems

The National Assessment must be completed by January 1, 1994, only a year and a half after the law takes effect. This time frame hardly allows enough time to truly measure the effect of the law. It is imperative that the National Assessment reports reflect this shortcoming and that Congress understand this severe limitation of the findings. The National Assessment researchers must also take this factor into account and create designs that show trends and directions.

Researchers should also be alert to the varying definitions of special populations between states and even within some states. For example, some states define a dropout as an individual who leaves school during the academic year (generally September-May), but do not include those who do not enroll in September. Others count all school leavers in the dropout rate.

Another difficulty researchers will encounter is the different service delivery systems between and within states. A corresponding problem is the various tech-prep and academic/vocational education models being implemented. In addition, the mandated performance standards may very well result in 50 different sets of state standards.

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Principal Issues Regarding Native Americans to be Addressed by The National Assessment of Vocational Education

Gerald Slater*

HISTORICAL BACKGROUND

Any attempt to establish an assessment program for Indian vocational educational programs should be informed by at least a cursory understanding of the history of Indian education. This is not an easy task, as when one speaks of Indian people, one speaks of over 300 current tribes and an estimated 400 or more tribes at the beginning of the 1800s. H.L. Hodgkinson, in *The Demographics of the American Indian*, reports that there are currently over 200 languages and dialects spoken in Indian communities, out of a total of 400 languages spoken in the United States today. Since language is a common characteristic used to identify a distinct culture, this would indicate that while Indian communities make up less than 1 percent of the population, they make up 50 percent of the cultural diversity. Although the current Native American population is small, it is one of the most rapidly increasing populations in the United States today.

Several national studies have analyzed Indian education. Two of the most noted are *The Problem of Indian Administration*, known as the "Meriam Report of 1928," and the Senate Report, *Indian Education: A National Tragedy—A National Challenge*, known as the "Kennedy Report of 1969." These reports, with minor exceptions, indicate that the U.S. government's policies and efforts in Indian education have been a dismal failure. A brief overview of the history of Native American education follows.

The federal government has historically assumed responsibility for educational services to Native Americans, beginning with the treaty agreements at the time the reservations were established. The first major direction in meeting this responsibility was through agreements with various religious sects to provide educational services, including religious instruction, basic literacy, and in some cases, basic instruction in husbandry. The motivation for these services was to christianize the "savages." The policy divided the nation geographically and allocated the areas to the various religious denominations, which established mission schools on the reservations. These educational efforts met with very limited success and did little or nothing to help Indian people develop the skills and expertise to manage or govern themselves on tribal lands.

The next major direction of federal policy was a direct attempt at providing education through industrial training schools. Although the Bureau of Indian Affairs (BIA) was established in 1835, it was not until the 1870s that it played an active role in Indian education. In 1870, the federal government designated $100,000 for the operation of federal Industrial Schools, administered through the BIA. The first such school, The Carlisle Indian School, was established in 1879 in Pennsylvania. The methods used in these institutions were primarily military discipline and promotion of the

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Christian work ethic. By 1900, about 20 boarding schools had been established. Their educational programs were still basic literacy instruction and minimal vocational instruction in husbandry.

It is important to note that the underlying intention of this policy of relocation was to assimilate Native Americans into the dominant culture. Children were placed in boarding schools in the early primary grades, and the schools were notorious in their attempts to eradicate any vestiges of traditional Indian cultures. The practice of removing very young children from their parents and families was inhumane and this policy did not result in assimilation. It did result in tragic tearing and unraveling of the social structures of tribes and basic confusion of the identities of the thousands of Native American youth who were relocated. The boarding school personnel punished students who spoke their native languages and attempted to eradicate practice of traditional religions and the cultures' worldview or philosophy.

The result of this policy was that several generations of Native American people became disconnected and alienated from their families and lacked identity and ties to their history or culture. The information they were given about their history or culture stated that they were savage, barbaric, and inferior to people of European descent. The schools were founded on the premise that Native Americans were less intelligent than other people, but good with their hands. Therefore, they were directed to the narrowest type of vocational education. The failure of these government policies resulted in dependency and despair, and the failure for not achieving self-sufficiency was blamed on the victims. Their dependency, despondency, and despair were used as further rationale for criticism and as evidence for their lack of intelligence and ability.

The Meriam Report of 1928 resulted in the next change in the federal government's policies toward Indian people. This report pointed out that many tribes had been pushed onto land that whites had not wanted and that could not provide a decent living for a trained and experienced white person. Regarding the boarding schools, it provided detailed evidence of mismanagement, physical abuse, diets that guaranteed slow starvation, and poorly trained school personnel. The report further noted that the schools' content stressed only white culture, and that methods of education were worse than futile. The report appeared to have a quick and important impact on Indian government policy. Six months after its release, *The New York Times* published an editorial that began, "Is it right to continue the policy of trying to de-Indianize the Indians and make white men out of them?" Within 5 years, 12 boarding schools either closed or became day schools. The curricula began to change and reflect Native American interests. In 1932, Franklin Roosevelt appointed John Collier Commissioner of Indian Affairs. Collier redefined the government's relationship with Native Americans, stating that, "Indian societies, whether ancient, regenerated or created anew, must be given status, responsibility and power." In 1934, Congress passed the Indian Reorganization Act. Four main provisions of the Act were: 1) a commitment to Indian self-government, 2) consolidation of Indian land holdings, 3) economic development for the reservations, and 4) support for cultural pluralism—the restoration of cultural traditions. For the first time, after a century of cultural genocide, Indian self-determination became the stated government policy.

Community schools became the thrust of the BIA's new direction in educating Native Americans. These new schools were expected to be service centers to the entire community. They included bath houses, shops, and libraries that served both adults and children. Native culture was included in the curricula. Teachers were provided inservice training, and programs were started to train Indian teachers as role models. This new direction in attention to Indian needs was relatively short-lived. Lack of government financial resources during the depression and a shift of national priorities in World War II resulted in an end to the brief 15-year attempt to solve Indian problems. In 1945, John Collier resigned, and the mood of Congress reverted to even harsher attempts at assimilation. Several tribes lost their status of sovereignty, legal jurisdictions were transferred to states, and many federal services were withdrawn.

The consequences of this new direction were increased unemployment and severely worsening economic and social conditions. In response to this, the federal government implemented a relocation program to move unemployed Indians to large urban centers. This policy also failed. Most Indians could not tolerate the discrimination, cultural isolation, and separation from extended families, and returned home to the reservations, where economic and social conditions had not improved. In 1952, the Commissioner of Indian Affairs stated that the ultimate objective of Indian education must be "complete integration into the American way of life." So federal policy had again come full circle, to assimilation and cultural genocide.

The next period of change would come with the civil rights movement of the 1960s. Native Americans demanded to be heard. Their insistence on an end to assimilation was finally met by President Nixon's policy that stated, "right of self-determination of the Indian people will be respected and their participation in the planning of their own destiny will actively be encouraged." This new attempt at self-determination would be implemented through allowing tribes to contract for the provision of federal services. There was no major infusion of federal dollars, rather it was a shift in administration of existing funds. Education was still believed to be the primary responsibility of the state, and with limited exceptions, continued as before.

The federal government's policy decision to shift its responsibility for Indian education to the states has failed to a great degree. States have excluded tribes from participating in the delivery of educational services. Most states explain this refusal on the grounds that reservations are federal land, exempt from taxation, and they have no obligation to provide special services to people who are not paying for them. This exclusion has been manifested in such things as regulations that prohibit Native Americans from voting or holding school board positions. Even after federal law prohibited this exclusion, most Indian people are still intimidated by racist attitudes and are reluctant to participate. Conflicts over legal jurisdiction and over ownership and control of lands and valuable resources such as minerals and water have impeded cooperation in providing meaningful and successful education services through state-run schools.

The newest significant effort in self-determination in education has been the Tribally Controlled Community College. The first such college was the Navajo Community College, established in 1968 and funded by the federal government through the Navajo Community College Act of 1970. In 1978, this Act was expanded as the Tribally Controlled Community College Act. Today, there are 24 tribally chartered and operated colleges which share a commitment to cultural understanding, preservation, and tribal development. Curricula at these colleges differ according to the unique needs of each tribe. These institutions act as a bridge between the Indian world and the dominant society. There is a pervading quality of pride in heritage and commitment to community in the schools, whose success can be measured by their growth in enrollments—from 1,689 students in 1981 to 4,400 students in 1989.

Social conditions on most reservations are very bleak and are often likened to those of third world nations. Alcoholism is epidemic, and health conditions are among the worst of any group in the nation. The cycle of poverty has lasted for hundreds of years and will take years to eradicate.

Unemployment rates have historically been the highest in the nation. Historical ups-and-downs that have influenced much of the nation's employment have not touched the reservations, where it has been all down. The brief interludes of self-determination during the hundreds of years when governmental policies have perpetuated dependency and lack of self-direction have not been long enough for tribes to create an economic base and a corresponding work force. Therefore, unemployment rates range far above the national average of 4-10 percent, up to 80 percent on some reservations. There are a few exceptions, such as the Mississippi Choctaw, who have turned the corner on extremely high unemployment. They have accomplished this with careful planning, federal help through economic development funds, and coordinating training funds, including Perkins monies. Although the 1980 Census does not report a total unemployment rate for Native Americans, it does supply a comprehensive summary of labor force, income, and poverty characteristics of reservations with the largest population of Indians. See attachment A for summary.

Some state-level data are available. Table 1 indicates the level of unemployment of states with rates of over 50 percent.

Table 1: States with Native American Unemployment Rates Over 50%

STATES	AVAILABLE TO WORK	EMPLOYED	UNEMPLOYED	% UNEMPLOYED
South Dakota	23,108	6,110	16,998	74%
Wyoming	2,308	711	1,597	69%
Nebraska	1,868	641	1,227	66%
Minnesota	7,450	2,698	4,752	64%
Alaska	38,107	14,557	23,550	62%
North Dakota	9,477	3,789	5,688	60%
Iowa	335	137	198	59%
Washington	17,935	7,443	10,492	59%
California	13,155	5,556	7,599	58%
Michigan	4,916	2,066	2,850	58%
Montana	15,546	6,590	8,956	58%
Arizona	86,061	37,770	48,291	56%
New Mexico	47,229	22,135	25,094	53%
New York	5,351	2,501	2,850	53%

STATES	AVAILABLE TO WORK	EMPLOYED	UNEMPLOYED	% UNEMPLOYED
South Dakota	23,108	6,110	16,998	74%
TOTAL	272,846	112,704	160,142	59%

Source: "Indian Service Population and Labor Force Estimates," Bureau of Indian Affairs, January 1987.

In sum, if history has taught us anything, it has shown that success in Indian education must be based on self-determination and self-governance. Only Indian people can understand and implement the kinds of programs that have the proper ingredients of cultural sensitivity and awareness of the dominant society. Forced assimilation will not allow for merging traditional Indian cultural values with the larger, dominant social and economic structures. Although tribal college vocational programs are a special type of tribal program, they sometimes serve as an effective bridge between the dominant Anglo world and the traditional tribal worlds because they tend to understand both worlds and can speak both languages. Their bridge position is important in helping coordinate programs, developing continuity, and helping reduce the high dropout and failure rate among Native Americans in the public schools.

TRIBAL COLLEGE PROGRAMS

An advantage of tribal college vocational programs is that tribal colleges allow students to access normal financial aid programs such as Pell Grants, Supplemental Education Opportunity Grants, and Stafford loans. Programs that are not offered through accredited institutions usually cannot access these funds. Without access to these and other sources of financial support, adult students would not be able to support themselves and their families while they are entered in a vocational program.

The Carnegie Report, "Tribal Colleges," 1989, credits the tribal colleges with reversal of high dropout rates among Native American postsecondary students. It attributes this success to the following factors:

> "First, the tribal colleges establish a learning environment that encourages participation by building self-confidence in students who have come to view failure as the norm.
>
> Second, tribal colleges celebrate and help sustain the rich Native American traditions.
>
> Third, tribal colleges provide essential services that enrich the communities that surround them.
>
> Fourth, the colleges are often the center for research and scholarship."

Although there has not been a comprehensive study of success rates at tribal colleges, several colleges report success rates of 70-80 percent. A careful analysis of the success of all vocational programs serving Native Americans should address the degree to which the factors outlined above exist. It also should examine these programs' efforts to and level of success in reducing or eliminating factors that contribute to high dropout rates among Native Americans.

The tribal colleges draw their basic financial support from funds appropriated for the Tribally Controlled Community College Act. The legislation initially designated $4,000 for each full-time equivalent (FTE) Native American student, but the first year's appropriation was $3,000 per FTE. The current law allows $6,000 per FTE, but the appropriation has decreased to $1,900 per FTE. Many of the colleges compete for additional funding, such as the set-aside Perkins funds. In fact, many of the tribal colleges that were established over the last 10 years started with Perkins money. The current level of Perkins funds to tribal colleges is shown in table 2.

Table 2: Distribution of the Native American Set Aside for 1987-1991

	TRIBAL COLLEGE		TRIBAL ORGANIZATION	
Year	**Amount**	**Number of Projects**	**Amount**	**Number of Projects**
1987-1988	$2,749,732.	12 Projects	$7,664,620.	26 Projects
1988-1989	$3,341,195.	11 Projects	$7,664,620.	29 Projects
1989-1990	$2,955,557.	13 Projects	$7,853,433.	27 Projects
1990-1991	$3,371,122.	11 Projects	$6,638,825.	24 Projects

Information provided by Department of Education Vocational projects staff in March 1991

An important quality of Native American-managed programs is the level of commitment to success. With Native American vocational programs, the concept of reform is not an afterthought. It is not an exercise in supplanting funds without detection (or continuing the "business as usual" attitude) and maintaining the same or a greater level of funding. Rather, reform is seen as necessary to avoid the failures of the past and provide solutions for the future. Furthermore, dropping out and failing are not acceptable. Indian programs find ways to overcome the problems, and either retain the students or recruit them again and again and continue to struggle for success. Anything less is unacceptable, because they are family and friends. They are our people, and they are our future, not a statistic of past failure. If there is a thought of giving up on a person who is not succeeding, the person's grandmother, aunt, or brother will be quick to point out honor is not for those who turn their back on others. For Indian people, honor is not given for acquiring great wealth or material goods. It is given to those who have a commitment and concern for the well-being of their people.

The traditions that bind Native American people together, and to their land, are strong. They have endured for hundreds of years and through many different policies and administrations. They transcend law and acts of Congress, and they have endured through tremendous hardship. They are not without change, but the essential elements are still present. The qualities and practices of those traditional societies that allowed the Native American people to live in relative harmony with their environment for thousands of years—existing without jails or prisons, without mental institutions, and without rest homes for the unwanted elderly—have been greatly diminished, but they are still present.

ISSUES FOR THE NATIONAL ASSESSMENT

An increase in the state educational programs' success rate with Native American people is imperative, as the majority of Native American students now attend public education provided by the state. The distribution is shown in table 3:

Table 3: State/Federal School Attendance Distribution

Percent in BIA schools	**10%**
Percent in private schools	**5%**
Percent in public schools	**85%**

Source: Demographics of American Indian; H. Hodgkinson, 1990

Vocational education programs funded by the federal government can play a vital role in requiring states to develop advisory committees comprised of Indian people who will ensure cultural sensitivity. These committees could also help states avoid past assumptions that the dominant Anglo society knows "what's best for Indian people." The committees can help develop and implement programs that will match the unique needs of each tribal group and provide the skills and education that will best lead to economic self-sufficiency of Indian people.

To be successful, educational methods and teaching processes must reflect cultural norms and values. For example, in most Indian societies cooperation is more important than competition. It is rude to stare directly into another person's eyes when speaking to him. It is much more important to attend to the need of a family member than it is to attend classes. Facts and information can be presented individually, but lessons involved with values are best presented in group activities.

Wherever possible, educational personnel should be Native American. Role models greatly influence students' identification with the program, and students feel more acceptance and a sense of belonging. Native American personnel often have a better grasp of Native American students' life experience and understand their different cultural values and norms.

To accurately measure the effectiveness of a tribal vocational education program, it is imperative to analyze results in a community-unit context. Tribal programs are very closely linked to many aspects of the community. By necessity, the programs share resources and usually cooperate closely with most facets of the community.

The Kennedy Report of 1969 attributed the underrepresentation of Indian people in higher education to inadequate academic preparation, teacher and counselor discouragement, financial difficulties, and problems with emotional and social adjustment. These problems have not been eradicated, and are still primary considerations today. As a result, the dropout rate for Native Americans in secondary education far exceeds the national average. A 1988 report from the National Center for Education Statistics reports the Native American dropout rate for 1988 at 35.5 percent, while the U.S. dropout rate for this same time was 28.8. In addition to the problem of dropping out, there is another problem related to adequate preparation to successfully pursue postsecondary education.

There are very limited data on the graduation rates of Indian students in postsecondary educational institutions. In an article, "A Foot In Each World" (in *Black Issues in Higher Education*, March 29, 1990), Dr. Robert Wells reported a study of 79 colleges with 4 percent or more Native Americans. In 1989, only one in four students, or 25 percent, completed the programs they had undertaken. The Carnegie Report "Tribal Colleges" reports a failure rate of up to 90 percent for Indian students, who leave their reservations to attend postsecondary education and training.

Native Americans are ambivalent about vocational education—indeed, about most education—because of the previous attitude among the dominant population that Indians are less intelligent and can only work with their hands. This has resulted in a need for integrated academics and applied instruction. Native American educators are well aware of the pitfalls of narrowly focused vocational training, as there are already too many Native Americans who are narrowly trained and have little or no opportunity for employment. The artificial boundaries that result from narrow vocational training go against the Native Americans' basic holistic understanding of the world and human's relationship in it. Traditional ways to knowledge and skill are based, to a great degree, on merging the humanities and social concerns with the practical aspects of life. Future funding of vocational programs for Native Americans should also require a plan for ensuring integration of academics and applied instruction.

Vocational education also must be developed with great consideration for tribal economics. Every reservation's economy is unique. It often differs from national trends. As with most economies, it is tied to the natural resources within the governmental control. Types of economic development will vary greatly from reservation to reservation. Some have potential for developing minerals, agriculture, or tourism, and all have an untapped labor force. A universal problem with economic development is lack of capital for investment and lack of an infrastructure of supporting services such as roads, communications, and general community development that will attract industry. In addition, tribal values will greatly dictate how much, and in what ways, resources can or will be developed. Tribal beliefs and values will not allow resources development at any cost. Many Indian people believe it is better to be poor than to degrade the environment. The Indian religious belief that all people are a part of the environment, not the owner of it, precludes development at any cost. Therefore, economic development, and the corresponding training, must be done in accordance with the tribal values.

Most tribes have developed an Overall Economic Development Plan (OEDP). These formal documents outline the tribe's intentions for economic development, and can serve as blueprints indicating the necessary corresponding training needs. Although these documents differ from tribe to tribe and vary in their degree of conclusiveness, they can certainly serve as a starting point for planning purposes. In addition to their OEDPs, many tribes have conducted manpower surveys to help meet the needs of their current local economies and anticipate future personnel and training related to projections in their OEDPs.

There are two types of Perkins funds that impact Indian people: funds awarded to tribes or tribal organizations on a competitive basis and the formula-based funds allocated to states to serve disadvantaged populations, including Indian people. To ensure that state funds successfully impact on Native Americans, the people should be allowed a measure of self-determination, rather than giving the states complete freedom to determine what is best for them. It should be noted that most of the funds are allocated through public secondary schools and public vocational training schools, which are governed and controlled by non-Indian people. The direction and requirements of the new Perkins

Act for formula-based funding to the states are not likely to address this concern, as there is no required participation of Native Americans. The new legislation does not specifically target Native Americans; it targets the "economically disadvantaged."

Many of the concerns related to formula-based funding to the states do not apply to the Native American set-aside funds. Only tribes or tribal organizations qualify to apply for the set-aside funds, so tribal involvement is required through this funding source. The set-aside funding is based on clearly established criteria. A 65 percent placement of trainee graduates is required. Evaluations are required, and failure to complete objectives or comply with the law can and does result in loss of funding. The very nature of the competitive process ensures that the best and most innovative programs receive funding.

Data Sources

There are several major sources of data relating to Indian people. The first is the BIA, which maintains demographic information. There are several levels of information sources in the BIA. They include the central office, Bureau of Indian Affairs, Department of Interior, Washington, D.C. 20240, and 12 area offices. Agency superintendent offices are located at each of the 287 federally recognized tribes in the United States. The area offices coordinate the affairs of the tribes in the 12 BIA service areas. The 12 area offices are as follows:

AREA	ADDRESS
Aberdeen	115 4th Avenue SE Aberdeen, SD 57401
Albuquerque	P.O. Box 26567 615 N. 1st Street Albuquerque, NM 87125-6567
Anadarko	P.O. Box 368 Anadarko, OK 73005
Billings	316 N. 26th Street Billings, MT 59101
Juneau	Box 3-8000 Juneau, AK 99802
Minneapolis	15 S. 5th Street Minneapolis, MN 55402
Muskogee	5th and W. Okmulgee Muskogee, OK 74401
Phoenix	P.O. Box 101 Phoenix, AZ 85001
Portland	P.O. Box 3785 1425 NE Irving Portland, OR 97208
Sacramento	2800 Cottage Way Sacramento, CA 95825

Eastern Area	1951 Constitution Avenue NW Washington, DC 20245
Navajo Area	P.O. Box M Window Rock, AZ 86515

Separate and distinct from the BIA office at each of the 287 reservations are the tribal offices. These offices are under the authority of the tribal councils and have great variability in size of staff and number and types of programs. Most services are either provided directly by the BIA or contracted by the tribe from the BIA. So even though services may be administered by a tribe, the BIA usually will have records on these programs, although there are some exceptions. These exceptions are usually programs that are funded directly by tribal funds or by other non-BIA sources, such as the Department of Education, the Department of Labor, or the Department of Health and Human Services. Although tribes may have some sources of data, there is usually no clearinghouse for information. The best point of contact with the tribe is its executive secretary, who will either have the information or know what department to contact.

Native Americans are one of the most studied groups of people in the United States, and a great deal of data exist. The BIA has social information on each tribe. Most tribes (or the BIA) handle their welfare systems and have their own employment programs such as JTPA. Many tribes have Tribal Work Experience Programs (TWEP), which are synonymous with state work-for-welfare programs. Data on these programs and their clients should be available at the tribal level.

Educational data on Indian people will be less centralized. The BIA will have information on education that is administered or funded by them, but it will not have comprehensive data on the public school system. As stated previously, 85 percent of Indian elementary and secondary students are in public schools.

The best source of information on vocational education programs funded under the Indian set-aside of the Perkins Act will be the programs themselves. Questions of effectiveness can be included in the reporting requirement of each program that is awarded funding. Data on vocational education programs administered by tribal colleges could be solicited directly from them. A list of colleges follows.

COLLEGE	ADDRESS
Bay Mills Community College	Route 1 Brimley, MI 49715 (906) 248-3354
Blackfeet Community College	P.O. Box 819 Browning, MT 56417 (406) 338-5411
Cheyenne River Community College	P.O. Box 220 Eagle Butte, SD 57625 (605) 964-8635
D-Q University	P.O. Box 409 Davis, CA 95617 (916) 758-0470

Dull Knife Memorial College	P.O. Box 98 Lame Deer, MT 59043 (406) 477-6210
Fond Du Lac Community College	302 14th Street Cloquet, MN 55720 (218) 879-0800
Fort Belknap Community College	P.O. Box 547 Harlem, MT 59526 (406) 353-2205, ext. 421
Fort Berthold Community College	P.O. Box 490 New Town, ND 58763 (701) 627-3665
Fort Peck Community College	P.O. Box 575 Poplar, MT 59255 (406) 768-5552
Haskell Indian Junior College	P.O. Box H-1304 Lawrence, KS 66044 (913) 749-8468
Little Big Horn College	P.O. Box 370 Crow Agency, MT 59022 (406) 638-2228
Little Hoop Community College	P.O. Box 269 Fort Totten, ND 58335 (701) 766-4415
Navajo Community College	Tsaile, AZ 86556 (602) 724-3311
Nebraska Indian Community College	P.O. Box 752 Winnebago, NE 68071 (402) 878-2414
Northwest Indian College	2522 Kwina Road Bellingham, WA 98226 (206) 676-2772
Oglala Lakota College	P.O. Box 490 Kyle, SD 57752 (605) 455-2321
Lac Courte Oreilles Ojibwa Community College	R.R. 2, Box 2357 Hayward, WI 54843 (715) 634-4790
Salish Kootenai College	Box 117 Pablo, MT 59855 (406) 675-4800
Sinte Gleska College	P.O. Box 490 Rosebud, SD 57570 (605) 747-2263

Sisseton-Wahpeton Community College	Agency Village P.O. Box 689 Sisseton, SD 57262 (605) 698-3966
Standing Rock College	P.O. Box 450 Fort Yates, ND 58538 (701)854-3861
Stone Child Community College	Rocky Boy Route, Box 1082 Box Elder, MT 59521 (406) 395-4313
Turtle Mountain Community College	P.O. Box 340 Belcourt, ND 58316 (701) 477-5605
United Tribes Technical College	3315 University Drive Bismark, ND 58501 (701) 255-3285

Problems

A major problem for tribal programs (and others) will be defining terms. What does integrating academics and vocational education mean? How do you define "handicapped?" For that matter, what is an Indian? At the time the law to fund tribal colleges was established, 42 different definitions of "Indian" were discovered. A list of clear definitions of terms would greatly help agencies and individuals respond to surveys or questionnaires.

Finally, community impact assessment can be done only by a limited sample of focused interviews on selected reservations. The federal project officers of Perkins' Indian programs could identify programs that best meet assessment design criteria. Knowledgeable Native Americans could best accomplish this type of interviewing, as they would understand the background and context of the tribal programs, and the programs would be more likely to respond with candor.

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Attachment A

Summary of 1979 Labor Force, Income, and Poverty Characteristics of American Indians, Eskimos, and Aleuts for Selected Reservations (1980)

(Data are based on a sample)

25 reservations with the largest number of American Indians, Eskimos, and Aleuts	Percent in labor force in 1979	Families with American Indian, Eskimo or Aleut householder or spouse; percent with no workers	Percent of persons aged 15 years and older receiving benefits in 1979	Median family income	Percent of persons in poverty
Total persons	65.3	11.9	41.5	$ 9,924	44.8
Blackfeet Reservation, Mont.	72.2	6.4	45.7	$10,576	39.1
Colville Reservation, Wash.	79.7	7.3	37.5	$13,501	25.3
Crow Reservation, Mont.	70.1	5.9	48.6	$12,239	33.6
Eastern Cherokee Reservation, N.C.	73.7	7.2	47.7	$ 9,774	37.7
Flathead Reservation, Mont.	75.1	6.5	47.6	$11,395	35.2
Fort Apache Reservation, Ariz.	64.1	9.4	30.8	$ 9,273	49.1
Fort Peck Reservation, Mont.	75.7	6.0	51.3	$10.864	41.8
Gila River Reservation, Ariz.	61.5	15.1	40.7	$ 7,955	53.1
Hopi Reservation, Ariz.	54.7	17.6	31.3	$ 8,197	53.3
Laguna Pueblo, N.M.	70.3	6.5	27.6	$16,755	14.4
Leach Lake Reservation, Minn.	69.4	12.6	52.1	$ 9,247	43.1
Mississippi Choclaw Reservation	68.5	7.3	40.6	$10,535	39.5
Navajo Reservation, Ariz.- N.M.- Utah	58.3	16.0	38.0	$ 8,397	52.4
Northern Cheyenne Reservation, Mont.	66.8	13.6	45.9	$ 9.699	44.9
Osage Reservation, Okla.	65.9	12.5	30.1	$16,095	17.3
Pine Ridge Reservation, S.D.	61.8	15.2	47.7	$ 7,942	58.3
Red Lake Reservation, Minn.	63.2	15.0	40.9	$10,025	41.3
Rosebud Reservation, S.D.	65.0	13.6	52.2	$ 8,868	51.4
San Carlos Reservation, Ariz.	59.1	12.3	43.0	$ 7,986	55.1
Standing Rock Reservation, N.D.- S.D.	65.8	13.5	46.6	$ 8,107	55.0
Tohono O'Odham Reservation, Ariz.	58.6	13.5	50.6	$ 7,003	59.0
Turtle Mountain Reservation, N.D.	64.8	17.9	47.8	$ 8,832	48.5
Wind River Reservation, Wyo.	68.2	9.3	31.3	$10,816	38.7
Yakima Reservation, Wash.	70.1	9.6	44.5	$11,324	38.7
Zuni Pueblo, N.M.	79.7	3.1	46.6	$10,354	47.1

Source: *We, the First Americans*, D.L. Johnson, E.L. Paisano, & M.J. Levin (U.S. Dept. of Commerce, Bureau of the Census, December 1988)

Special Considerations in Assessing Vocational Education in Corrections

Osa D. Coffey, Ph.D*

INTRODUCTION

The Carl D. Perkins Vocational and Applied Technology Act of 1990 places renewed emphasis on programs and services to special populations. Under that general heading, "criminal offenders" are defined as an eligible subpopulation. The new Act contains many provisions that could potentially bring increased federal support for the nation's "correctional" populations. Chief among these special provisions are

1. a 1 percent set-aside (Title II, Part B, Subpart 2, Section 225);
2. access by corrections to various other initiatives; for example, professional development (Section 201), "displaced homemakers" (Section 521), and sex equity (Section 222);
3. access by correctional institutions/agencies classified by the state as an LEA (local education agency)[1] to tech-prep funds (Section 343), dropout prevention funds (Section 418), Demonstration Projects for the Integration of Vocational and Academic Learning (Section 420), and Cooperative Demonstration Programs (Section 420a); and
4. the creation of an Office of Correctional Education in the U.S. Department of Education for the purposes of coordination, provision of technical assistance, and data collection.[2]

Although correctional agencies have been able to draw on federal monies for correctional vocational programs under previous acts, it was not until 1984 that a special set-aside was created exclusively for criminal offenders.[3] The 1990 act slightly increases the set-aside and provides access for corrections to other parts and sections. However, the exclusion from the 1990 Act of set-asides for students with disabilities and those who are disadvantaged (traditionally potential funding sources for corrections), coupled with the current U.S. Department of Education interpretation that the "hold harmless" provision (Section 102(c)) only pertains to the 1 percent set-aside, may *reduce* rather than *increase* federal support for criminal offenders.[4] For example, should the Virginia Department of Education interpret the new law and "hold harmless" provision as limiting the Department of Correctional Education to the set-aside alone, the agency would lose about $300,000, compared to the previous year.

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[1] Very few state or local correctional agencies are defined as LEAs by their state departments of education, although many may be so considered for special purposes.

[2] Since December 1980, such an office has existed intermittently in the Office of Vocational and Adult Education (OVAE) in the Department through funding provided by the National Institute of Corrections (NIC). This office did not become permanent or fully supported by the U.S. Department of Education until mandated by the 1990 Perkins Act.

The 1 percent set-aside for criminal offenders was controversial from the very start. Criminal offenders are no one's political constituency. Feared by the public, these offenders are often perceived as undeserving when compared to other special populations. They do, however, constitute the highest concentration of educationally disadvantaged and illiterate persons in our nation. A disproportionately large percentage of this population is also handicapped.[5] With more than one million adults behind bars, at an average cost of $20,000 per inmate per year, the cost to society of crime and it consequences amounts to billions of dollars every year. Furthermore, the adult inmate population is growing at the rate of 12 percent per year.

It is crucial to determine whether further investment in the education of criminal offenders bears fruit in terms of reduced costs for criminal justice, welfare, and unemployment. To date, little is known about the exact use and impact of federal vocational (or other) dollars on criminal offenders. There have been no national, uniform data collections, nor have previous national assessments of vocational education given more than scant attention to this area. The inclusion of and careful attention to this special population in the currently planned National Assessment could be a crucial start and could begin to fill an important knowledge gap.

This paper is intended to assist the team in charge of the mandated National Assessment of Vocational Education by suggesting ways in which it could include correctional vocational education in the assessment. It will address three points:

1. What are the principal issues and research questions to be addressed by the Assessment in this subject area?

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[3] A study made at the request of Congressman John Conyers, Jr. (D-Michigan) by the Congressional Research Office determined that when the first 1 percent set-aside was instituted, some states gained access to federal vocational dollars for the first time, whereas others lost monies by being restricted to the set-aside, having previously received funding from several titles and sections of the Act.

[4] According to a letter sent to the Secretary of Education and signed by Senators Pell and Kennedy, Congress intended the hold harmless provision to include all funding previously received from the Perkins Act, not just the set-aside.

[5] It has been estimated that between 25 to 40 percent of incarcerated adults and juveniles meet the definition of "handicapped" in P.L. 94-142. The percentage among adult offenders is not known, but is believed to be high.

2. What are the principal data sources, or, if inadequate, what new data should be collected?

3. What problems should be anticipated in conducting research on this subject? How can these problems be mitigated?

The paper will further address some specific issues raised by Dr. David Boesel, Director of the National Assessment:

1. What do researchers and assessors need to know about correctional vocational education?

2. What is known about the 1 percent set-aside?

3. What kind of surveys and case studies should researchers undertake in corrections?

4. What is the participation of special populations in corrections?

5. What is known about post-program opportunities and outcomes?

ISSUES AND RESEARCH QUESTIONS

The Funding Process

The definitions of "criminal offender" and "correctional institution" provided in the Act are extremely broad.[6] Hence, the 1 percent set-aside and other funds designated for this special population might be spread so thin among various correctional subpopulations and types of institutions as to have little impact. They also might be concentrated in one or a few areas, leaving out large numbers of potentially eligible persons. Therefore, the first cluster of research questions should be

1. **How did each state distribute the federal dollars among criminal offenders? Did the state favor any one subgroup such as probationers, parolees, prison inmates, pre-trial detainees, first offenders, or youthful offenders? If any one subgroup was selected above others, what was the state's rationale?**

Past experience shows that some states allocated the entire set-aside to one subgroup of criminal offenders (e.g., probationers or juveniles). Many states gave the state adult correctional agencies all the funds, either for their own use or for further distribution. Although jails house an enormous number of inmates they seem to have been mostly neglected.[7] It is important for the National Assessment to try to determine on what basis the correctional allocations were made.

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[6] It should be noted that although the Perkins Act includes all types of offenders and institutions, "corrections" and "offenders" as used in this paper refer primarily to adults and youth incarcerated in state correctional facilities. This is due, in part, to the author's immediate experience with these target groups. However, offenders who are on probation or parole or in community-based programs usually have access to community vocational programs. Such programs should be assessed as mainstream, rather than correctional, programs.

2. **What input, if any, did representatives of various types of correctional institutions have in the planning process and/or in decisionmaking related to allocation of funds?**

Although the Act mandates a state council on vocational education, a committee of practitioners, and one or more planning committees, the mandate does not specifically require that a correctional representative be included on any of these bodies. Until the 1984 Perkins Act, corrections had a mandated seat on the state vocational advisory councils. When the mandate was eliminated, few correctional representatives were able to keep their seats. The National Assessment should study what input corrections had in the crucial processes of developing plans and distributing monies. If a lack of meaningful participation is found, Congress may see a need for a designated position on these bodies in the future.

3. **Under what various titles and sections of the Act did correctional agencies/criminal offenders receive funding?**

As indicated in this paper's introduction, criminal offenders/correctional institutions can potentially receive funding from various sections in addition to the 1 percent set-aside, especially in the case where a correctional agency is classified as a LEA by the state. Past experience indicates that many states have restricted correction to the set-aside, while some states have funded corrections more freely under several titles and sections. With the current interpretation of the "hold harmless" provision, it becomes easy for states that do not wish to fund corrections beyond the minimum required by federal law to limit correctional populations to the set-aside funds.

4. **Is there a significant relationship between a certain type of administrative structure for correctional education and the amount and diversity of Perkins monies received?**

The assessors need to understand how correctional education is organized and administered in various states. Typically, correctional education programs in adult prisons are administered through a program division within a department of corrections (DOC). However, nine states have developed "correctional school districts." One state (Virginia) has a separate state agency for adult and juvenile correctional education. Several states have contracted out the administration and provision of correctional education to community colleges or local school systems. Some states have adult and juvenile correctional education under one umbrella; some have two separate agencies in charge.[8]

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[7] Although it is true that many inmates spend very little time in a jail due to a great backlog of state-sentenced inmates, it is not uncommon for felons to spend up to 5 years in a jail, often without access to vocational (or academic) programs.

[8] For further information, see Osa D. Coffey, "Trends in the Administration of Corrections Education," in Wolford, Bruce ed., *Correctional Education: Perspectives on Programs for Adult Offenders*, National Center for Research in Vocational Education, Ohio State University, 1986.

In 1981, Richard Carlson reported (based on the Henry David National Institute of Education [NIE] National Assessment) that correctional school district states received significantly more funding than others.[9] In a 1985 study, the author made similar findings but showed that some states with the traditional DOC model did just as well.

Since the new Act clearly distinguishes between correctional agencies with state-acknowledged LEA status and others, the National Assessment should determine what difference the LEA status has on funding patterns.[10]

5. **Did criminal offenders receive more or less funding under the 1990 Act than under the previous one?**

In 1990, the driving force behind the 1 percent set-aside for corrections (as in 1984) was Senator Claiborne Pell (D-Rhode Island). It is clear from his correspondence with the Secretary of Education (see footnote 4) and other sources that his intention was to *increase* the funding base for correctional education through the set-aside while allowing corrections access to other parts of Act. He was acting in the belief that educational programs for adult and juvenile offenders will lead to increased chances for rehabilitation, post-release employment, and reduced recidivism. The Department of Education's narrow interpretation of the "hold harmless" provision could lead to results contrary to the congressional intent. The National Assessment should look into this.[11]

6. **What proportion of each state's total spending for vocational education for criminal offenders did the Perkins Act monies constitute?**

It is important to determine to what degree states depend on federal funding for vocational education for offenders. In a study of this subject conducted by the author in the spring of 1988, states reported that the Perkins Act constituted from 0 to 80 percent of their total vocational funds (see study referenced in footnote 3).

7. **What was the criminal offender per capita expenditure in each state?**

This question could be further subdivided or focused exclusively on a few correctional subpopulations; for example, adult prison inmates, juveniles in state correctional facilities, probationers, etc. This is an important question because both crime and incarceration rates fluctuate a great deal among the 50 states. Generally speaking, the South has the highest incarceration rates, the longest sentences, and the lowest parole and probation rates. The National Assessment's probe in this area could lead to recommendations for a change in the formula for funding correctional education that would take into account not only education and economic data, but also criminal justice data.

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[9] See Richard Carlson *Vocational Education in Prison Setting*. Report to the U.S. Department of Education, 1981.

[10] The Virginia Department of Education will be designated an LEA by state statute, effective July 1, 1991. This is probably the first time a correctional education agency has become an LEA by statute rather than by state "consideration" or regulation.

[11] The Conyers study cited in footnote 3 revealed that the 1 percent set-aside increased the funding base for correctional education generally, although some states experienced a reduction in Perkins funding (as much as $375,000).

Uses of Funding for Criminal Offenders

The second broad area the National Assessment should explore is how Perkins Act funding is being used in corrections. This is the area where corrections could most readily be part of "mainstream" assessments. In most correctional settings—especially adult and juvenile secure state facilities—the needs to be met by the federal funds are the same as to those in community programs; that is, program and curriculum improvement, staff development, equipment upgrade and expansion, academic/vocational linkages, equity for females, and special programs and adaptations for handicapped students and those with limited English ability.

During the March 1991 assessment design planning conference in Washington, several speakers expressed the opinion that it might be difficult to track spending. It is this author's belief that tracking can be done in the correctional area and that most recipients in corrections already keep this information. In the Virginia Department of Correctional Education, uses of all federal dollars are tracked separately from state general funds, making it possible to account for exactly how each Perkins dollar is spent. The problem the National Assessment will experience is that this information might not be readily available centrally; that is, in each state education agency (SEA) which administered the flow-through funds, and therefore might have to be collected from each local recipient. The National Assessment should consider using a sample for this aspect of the evaluation; for example, selecting the 10 to 20 correctional agencies in the United States that received the highest Perkins allocations.

Measuring Outcomes in Corrections

Measuring the outcomes of Perkins Act expenditures in corrections will be by far the most difficult task for the National Assessment. However, if it can be done, it will be the best contribution the assessment can make to correctional education nationwide. Well-designed, scientific, followup studies are virtually nonexistent in this area, yet every legislator on both the state and federal levels wants to know if it is worthwhile to invest education dollars in persons who have broken the law. The critical question is not "What is in it for the *offender*?" but "What is in it for the *taxpayer*?"

Measuring outcomes is costly and difficult under any conditions. With criminal offenders the problems are compounded. In terms of outcome measures, criminal offender programs should be treated separately from community-based programs for other students. Furthermore, the only valid comparisons will be among offender programs. This is not to imply that criminal offender vocational programs should not or could not be of the same quality as other programs. What must be stressed is the fact that factors unique to, and often due to the correctional context will affect correctional outcomes. Specifically, there are four elements the National Assessment researchers must understand and take into account in designing and implementing this aspect of the total assessment: 1) the nature of the "typical" criminal offender; 2) the particular constraints of secure correctional environments (i.e., prisons, jails, and juvenile detention and correctional centers); 3) the impact of a criminal record on employment; and 4) the confusion of *correctional* outcome measures with *vocational education* outcome measures.

According to statistics from the U.S. Department of Justice, the "typical" offender, male or female, adult or juvenile, is multiply handicapped and/or educationally disadvantaged. Among adult offenders, 80 percent are school dropouts, with an illiteracy rate of 40 to 60 percent. At least 30 percent have serious drug abuse problems, and another 30 percent have alcohol abuse records. At least 40 percent were unemployed at the time of arrest; most of those who worked had less than subsistence-level incomes. Estimates show that learning disabilities and other handicapping conditions are several times as prevalent among offenders as among the general population. The greatest handicap of all is likely to be the criminal record that will follow the adult offender throughout his or her life. The juvenile offender profile is not very different from the adult profile. Typically, juvenile offenders are several grade levels below their age group. Increasingly, drugs, alcohol, and violence are part of the juvenile offender's history.

The secure correctional environment usually creates severe constraints on programs. Due to overcrowding, fiscal constraints, and the higher priorities usually set on security, correctional programs often lack adequate space and equipment for educational programs. Frequent lock-downs, tool-control policies, institutional counts, and other factors take large bites out of the time available for classes. Frequent—and often sudden—transfers impact on program continuity and completions. Uncertainty about parole or release makes it hard to time programs so that completions are possible and in proximity to release and possible outside employment. The criminal record is also a hindrance to employment. There are virtually hundreds of legal and licensing restrictions that bar ex-offenders from a number of employment opportunities. Furthermore, employer prejudice, although hard to assess, is a reality. Therefore, regardless of the quality of the vocational programs, ex-offenders are less likely to be successful in finding employment than nonoffenders and are likely to spend more time finding employment and to settle for lesser-skilled and lower-paid jobs. These factors clearly indicate that the assessors cannot compare correctional populations with general populations in terms of outcome measures involving time spent in a course, completion, or time between completion and employment.

Finally, a note of caution must be struck in terms of reduced recidivism as an outcome measure. Obviously, correctional education is often funded in the hope that upgraded basic skills, coupled with a marketable vocational trade, will lead to offenders' speedy employment after release at a wage which will permit post-release success and reduce recidivism. However, this view is somewhat naive since not all crime is caused by unemployment, poverty, or poor education. Despite intense studies in the 1970s of the relationship between unemployment and crime, no direct cause and effect has been defined. Several years ago, the California Youth Authority studied youth released from correctional facilities. They found 10 separate variables impacting on post-release success or failure. Only two of these variables were part of the institutional experience: education and treatment programs. Again, one must be careful not to attribute success or failure to one variable when many determinants are involved in crime and repeat crime. This is not to imply that recidivism should not be considered. Obviously, both state and federal governments invest in correctional education expecting a good return on the money. Cost savings can be derived from a number of factors related to vocational training for criminal offenders other than reduced recidivism, although that is the biggest factor.

Based on the above discussion, the following assessment recommendations are offered:

1. Design an outcome assessment specifically for like correctional programs to determine what is more or less effective in terms of vocational programing for criminal offenders (rather than comparing offender programs with community programs).

2. Use impact on recidivism as *one* outcome factor, not as *the* factor. Earlier release, greater productivity during incarceration (in prison industry or construction/ maintenance), a shorter period before employment after release, longer job retention, longer periods off welfare, etc., are factors that save taxpayers money in the long run, even if repeat crime eventually occurs. To the extent that these factors are present and can be directly related to Perkins Act programs, they are positive measures.

3. In order to collect credible followup data, the National Assessment should invite correctional education practitioners to help design the evaluation and select programs to participate in the study. The Assessment should also provide some funding to participating agencies to help them carry out the study.

The National Assessment could be in a position to help provide answers to the correctional education $64,000 dollar question: "What vocational programs have the highest success with what types of offenders as measured by post-release employment, economic status, and reduced recidivism?"

DATA SOURCES

Systematically collected data on correctional education—including correctional vocational education—do not exist. Federal funding for correction education has not traditionally been reported separately. In the past, an occasional study (e.g., the one requested by Congressman John Conyers and conducted by the Congressional Research Office and another undertaken by the Correctional Education Association) has attempted to fill part of this void. At best, some of these studies have determined the amount of federal funds states have received at certain times. No data exist that show how the funds were spent, with what results, or with what fluctuations over time. For the first time, there is currently an initiative under way to try to develop a federal, ongoing, systematic collection of correctional education statistics through the U.S. Department of Education. The Correctional Education Data Project (CEDP) has developed an instrument for data collection. It has yet to be piloted, and no actual implementation can be expected for at least another year. Because of the timing, the National Assessment initiative could be coordinated with the CEDP; it might not be too late to build the basic National Assessment questions into the draft instrument. This could be coordinated through the recently established Office of Correctional Education in the Office of Vocational and Adult Education.

The process and funding data described in the first sections of this paper could be collected through the SEAs, possibly with some followup surveys of correctional education recipients. Precise expenditure data (i.e., exactly how recipients used the federal funds as opposed to other monies) could be collected through recipient surveys if they are not available in the SEAs.

Outcome data will be the most difficult to collect. The author recommends that an instrument be developed with the assistance of practitioners. It should be implemented on a selected basis, as

Outcome data will be the most difficult to collect. The author recommends that an instrument be developed with the assistance of practitioners. It should be implemented on a selected basis, as more will be learned with a solid followup study in a few places than by attempting to collect the data on a broad scale. The sample should include correctional vocational programs in a variety of settings and under various types of administrative structures, where followup can be done through existing systems such as parole and probation data systems, the Offender Based Classification Information System (OBCIS), and state employment agency networks. To select the specific sites, programs, and correctional education contacts, the National Assessment should solicit assistance from the Office of Correctional Education in the Department of Education, the Correctional Education Association (CEA), and the Association of State and federal Directors of Correctional Education. Legal assistance should also be sought to ensure that all legal provisions for offenders' rights to privacy and confidentiality of offender records are followed. This is particularly critical in the case of juvenile offenders.

CONCLUSION

In the past, national assessments of vocational education have paid scant attention to correctional education programs. Correctional educators have not been invited to participate. Few programs for criminal offenders were scrutinized. As a result, Congress has had little information on which to base its legislative decisions. Since the NIE study in the late 1970s, the correctional population has grown by about 135 percent, and has become far too big to be ignored. It is critical that we determine how federal funds are best allocated and utilized to maximize their impact on the educational needs of criminal offenders.

The correctional community looks forward to participating in the National Assessment effort and hopes that the federal government will scrutinize correctional vocational programs on a par with community programs for nondelinquents. By necessity, the National Assessment's primary mandate is to provide future Congresses the information needed to make appropriate decisions related to amendments or reauthorizations of the Perkins Act. However, the Assessment could also provide important information for state and local administrators and program managers to use in improving program delivery to students.

Among other things, the National Assessment is charged to provide both the Congress and the U.S. taxpayers with information needed to answer two critical questions: **Can society afford to make a costly investment in vocational education for criminal offenders? Can society afford not to do so?**

Part 5:
Academic and Vocational Issues

Teacher Preparation, Qualifications, and Demand

Curtis R. Finch*

OVERVIEW

Beginning in the early 1980s, a number of studies and reports related to public education have caught the public's attention. *A Place Called School* (Goodlad, 1984), *A Nation at Risk* (National Commission on Excellence in Education, 1983), and *High School* (Boyer, 1983) are examples of reports that called for significant changes in education. Focusing more specifically on vocational education reform were documents such as *The Unfinished Agenda* (National Commission on Secondary Vocational Education, 1985), and *Investing in Our Children* (Committee on Economic Development, 1985).

Recommendations from these and other reports revealed a number of areas that demanded immediate attention. These included:

1. Vocational and academic educators must be equal partners in the education process, must complement each other, and must actually work together.
2. The basics *are* important. Basic education standards must be met by all students.
3. Basic skills must be made more relevant to each student. Basics should be integrated around each student's present and future life-role.
4. Each student should receive academic *and* vocational education.
5. The curriculum should focus on developing the whole student, not only his or her basic life- and work-skills.
6. Business, industry, and the community should have a more active role in the educational enterprise. (Finch, 1990)

In response to reform recommendations, a number of schools across the country have implemented meaningful changes. These changes include increasing graduation requirements, placing emphasis on integrated academic and vocational education, and improving linkages between secondary and postsecondary institutions.

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Following closely in the wake of studies related to education reform were numerous examinations of teacher education. For example, *Tomorrow's Teachers* (Holmes Group, 1986) and *A National Prepared: Teachers for the 21st Century* (Carnegie Forum on Education and the Economy, 1986) recommended that a bachelor's degree in the arts and sciences serve as a prerequisite for the professional study of teaching. (Additional teacher preparation recommendations are documented in Finch, 1987; Hughes, 1987; Lee, 1987; and Smith, 1987) Focusing more directly on vocational teacher education, *The Unfinished Agenda* recommendations indicated that vocational education teachers should attain the same level of education as their academic teacher counterparts. Concern was also expressed about the need to update teachers' technical skills and to provide better means by which talented individuals could be attracted to and retained in the teaching profession.

The overall impact of teacher education reform has been great. Some universities have decided to abolish their undergraduate teacher education programs. Other universities have decided to eliminate all teacher education programs from their offerings (Diegmueller, 1991). In sum, the reform movement has had significant and lasting impact on teacher preparation.

In addition to the impact of educational reform on teacher preparation, teachers' professional roles seem to be evolving at a more rapid rate than in the past. For example, academic and vocational teachers are being asked to work together in the integration of subject matter content and delivery. Teachers at the secondary and postsecondary levels are expected to work together in establishing and maintaining tech-prep programs. These changing roles, in turn, have many implications for teacher preparation and qualifications. Clearly, the teaching environment—as well as teaching content and structure—is changing, and teachers must be responsive to these changes.

Building on the educational reform movement and teachers' evolving roles, this paper examines three important areas related to assessment: 1) teacher preparation, 2) teacher qualifications, and 3) teacher demand, including the extent to which demand is being met. These three areas are closely intertwined and thus should not be considered completely independently. It also should be noted that although relevant information has been drawn from general teacher education, the focus is more specifically on vocational education teachers and teaching.

ISSUES

Assessment issues logically flow from provisions contained in the 1990 Perkins Act. Assessment of teacher preparation, qualifications, and demand must be consistent with and build upon these provisions. Issues also flow from the current status of teachers and how well these professionals are being prepared for their future roles. A final set of issues is contained in documented research priorities related to vocational education personnel development (Lynch, 1987; Griggs, 1990).

Preparation Issues

What is the optimum mix of preparation studies and experiences for vocational teachers? Concern about preparation of teachers in general and vocational teachers in particular is well documented. For example, Beyer, Feinberg, Pagano, and Whitson (1989) question the divisions between educational and liberal studies many teacher education reformers seem to have taken for granted. Lynch and Griggs (1989) also take issue with teacher preparation. They question the notion that a degree in arts and sciences (or in subject matter that is most appropriate for vocational education) will ensure success in teaching a particular vocational subject. Researchers would thus do well to focus on the various ways vocational teachers are prepared and examine the existing links between preparation and actual performance in the teacher role. Unfortunately, this may not be feasible during the current assessment cycle. At this time, a realistic assessment goal would be to establish an information base that would enable future assessments to focus on links between preparation and performance.

What specific preparation must be provided to prepare vocational teachers for their new roles in the education enterprise? Both academic and vocational teachers are or soon will be faced with the task of integrating academic and vocational education in their schools. Teachers will also participate in establishing tech-prep programs that link secondary and postsecondary institutions to better meet students' needs. These changes as well as others have the potential to place new professional requirements on teachers. Examples of such requirements might include working as members of professional integration teams and coordinating educational content and delivery with counterparts in other departments and institutions. Although the exact nature of these requirements is not yet known, initiation of new curricular directions in the schools can provide researchers with a unique opportunity to examine how and to what degree teachers assume these new roles.

To what extent are vocational teachers prepared to work with special-needs students? This question is often asked and is typically answered by the comment "it depends." Teacher preparation programs and certification requirements vary from state to state and once teachers are on the job they may encounter students with a wide range of special needs. In the schools, teachers may receive support from a great number of specialists or may be on their own. As more and more special-needs students are mainstreamed in vocational education classes, it is important to know if teachers are capable of helping these young people and adults achieve their maximum potential.

Are those who currently teach continuing to develop both technically and professionally? Continuing to develop is as important to vocational teachers as it is to other professionals. Today's professional and technical knowledge and skills may be obsolete unless they are supplemented by new information and practice. This need extends beyond full-time teachers to part-time teachers, who are becoming an increasingly larger percentage of the faculty members in postsecondary institutions.

How do alternate paths into the vocational teaching profession compare to traditional paths in terms of teacher readiness to teach? It should come as no surprise that about 70 percent of the trade and industrial teachers do not have baccalaureate degrees. Many of these nondegreed teachers have entered the teaching field with little more than a high school diploma and a vita full of rich employment experiences in an occupational field. Others enter the vocational education arena after receiving baccalaureate degrees in a variety of fields and working in areas such as business, marketing, and agriculture (Lynch, 1990). The flow of persons with such diverse backgrounds and preparation into vocational education teaching raises a host of questions about readiness to teach. This is particularly true at a time when teachers are being expected to integrate academic and vocational education and to establish tech-prep programs.

Qualifications Issues

To what extent do teacher qualifications differ from preparation? Even though persons may have completed teacher education programs, it does not mean they will be competent teachers. Teachers enter the profession at stages ranging from advanced learners to seasoned professionals, and many must learn on the job what they did not learn in universities or while working in technical fields (Heath-Camp and Camp, 1991). Therefore, factors such as quality and relevance of teacher education programs and backgrounds of persons entering the teaching field create the potential for a great deal of variability in vocational teacher qualifications. This potential variability is clearly an area that warrants examination. However, the current assessment team may only be able to document the qualifications teachers currently possess (e.g., participation in organized preservice internships versus being placed in front of a class without professional preparation).

Does teacher preparation contribute to success in new teacher roles? Although tech-prep and integration of academic and vocational education are just beginning to be implemented in the schools, the next several years will see much growth in these areas. Thousands of teachers probably will be engaged in implementing new and refined programs. As these changes occur, it is an opportune time to examine how teachers accept new roles and the extent to which this acceptance is a function of preparation.

To what extent is occupational experience an asset or a liability to vocational teaching? The debate over how much occupational experience vocational teachers should have has gone on for decades. However, structural changes in vocational education curricula (i.e., integration of academic and vocational education, tech-prep) may contribute to making this debate obsolete. The creation of tech-prep programs may demand a new breed of vocational teacher. At the secondary level, there may be a need for teachers who have competence in a broad occupational field instead of a specific job and have greater facility at teaching the basics (mathematics, science, and English) as they apply to occupations. At the postsecondary level, teachers participating in tech-prep programs may need to meet the demands of better prepared high school students who have achieved higher levels of academic studies. A similar situation may exist for teachers who serve on professional teams that integrate academic and vocational education. This change may result in a need for vocational teachers who are themselves better prepared in mathematics, science, and English. Occupational experience, quality, and technical level may become increasingly critical. As vocational education evolves, the evolutionary nature of teacher qualifications may be a most meaningful area of study.

Demand Issues

In general, demand for teachers is a function of the number of students to be taught, class size, and teacher availability and attrition. However, with regard to vocational teachers, actual availability to teach can often be linked to the range of potential job opportunities in business and industry that are available to these teachers. Persons who can earn more money in business or industry than in teaching must do a great deal of soul-searching when it is time to make a job decision. Other factors certainly affect the demand for teachers. These are included in questions related to the area of teacher demand, provided below:

1. To what extent is there a demand for teachers at the postsecondary and secondary levels in various vocational teaching areas?

2. To what extent are persons available to teach at the secondary and postsecondary levels in various vocational teaching areas?

3. Does current and future vocational teacher supply meet current and projected demand?

4. Is vocational teacher demand shifting from the secondary to the postsecondary level, from various teaching areas to other teaching areas, and from a demand for fewer nondegreed to more degreed teachers?

5. To what extent do certification requirements affect vocational teacher qualifications and thus affect demand?

DATA SOURCES

A review of research and literature related to vocational teacher preparation, qualifications, and demand indicates the availability of several potential data sources. Presented below are highlights of some of the more recent studies related to vocational teachers and teaching.

Sources Related to Preparation

Pratzner (1987) conducted a comprehensive national survey of vocational teacher preservice and inservice preparation. The survey focused on both preservice preparation programs and beginning teachers' perceptions of these programs. Pratzner's report includes extensive information about teacher preparation and qualifications. For example, it was determined that vocational teacher preparation programs gave little attention to preparation for teaching basic skills and special student populations.

Another data source is an American Association of Colleges of Teacher Education (AACTE) teacher education survey (AACTE, 1990a). It includes enrollment in schools of teacher education by academic field and race/ethnicity. It was reported that as of Fall 1990, 4,128 students were enrolled in vocational teacher preparation. Enrollment distribution included: white, 75 percent; black, 15 percent; Hispanic, 2 percent; and other, 4 percent. It should be noted that the AACTE has conducted a number of surveys related to teacher education which may have implications for vocational teacher preparation (e.g., AACTE, 1990b).

A National Database on Vocational Teacher Education, a study conducted by the National Center for Research in Vocational Education (NCRVE), University of California-Berkeley (Lynch, 1990), provides comprehensive information about the vocational teacher education environment, the vocational teacher education professorate, and the vocational teacher education curriculum within a context of reform. Another NCRVE study (Finch, Schmidt, Oliver, and Yu, 1991) focused on an analysis of vocational teacher education graduates' university transcripts. This study provides a detailed view of the academic, technical, and professional studies completed by vocational teacher education students in six vocational teaching areas.

Sources Related to Qualifications

Although most studies give only passing concern to vocational teacher qualifications, there are several investigations that may serve as meaningful source documents for this area. For example, the

Pratzner (1987) study results include a great deal of information related to vocational teacher qualifications. In their recent report related to a comprehensive study of vocational teaching, Heath-Camp and Camp (1991) provide the results of a national survey of new or beginning vocational teachers. The report includes data related to areas such as gender, race, marital status, subjects and grade levels taught, job satisfaction, and income. This information is particularly useful with regard to persons from nontraditional backgrounds (e.g., not having degrees in vocational teaching) who are entering the vocational teaching field.

For some time, the National Center for Education Statistics (NCES) has conducted a Schools and Staffing Survey that may provide useful information about vocational teachers and teaching. The survey results include data related to vocational teacher demographic characteristics and educational backgrounds, and information by teaching area. The NCES is continually improving this comprehensive data base and sharpening its focus on vocational education teachers.

Several studies focusing on vocational teacher certification can be logically linked to the qualifications area. Duenk's (1989) study of certification requirements for trade and industrial teachers provides a meaningful view of a teacher group that has traditionally taught without the bachelor's degree. Data gathered from 53 states and territories reveal that only two states require the bachelor's degree for initial certification. Ten states require the bachelor's degree for full certification. A parallel study in the health occupations teaching area (Chappelka, 1989) reveals similar certification information. Unfortunately, there does not appear to be a document that provides comprehensive details about certification requirements for all vocational teaching areas on a state-by-state basis.

Sources Related to Demand

Information related to vocational teacher supply and demand appears to be at least partially available. Such information is gathered via separate surveys conducted by persons representing various vocational teaching areas; therefore, comparability of information across teaching areas does not appear to be possible.

A national study of teacher supply and demand in agricultural education has been conducted annually for the past 25 years. The most recent survey (Camp and Oliver, 1990) provides information on a state-by-state basis about agriculture teacher positions available and agriculture teachers prepared by teacher education institutions. Trend data from 1965 to the present are also provided.

For a number of years, *Industrial Education Magazine* has conducted surveys of trade and industrial and technology education (formerly industrial arts) teacher supply and demand. Both the need for and shortage of teachers are reported on a state-by-state basis. A recent technology education teacher survey (Miller, 1990) includes information about the number of teachers currently employed in each state and the number of teachers produced by colleges and universities. With regard to the trade and industrial teacher survey (Greenan, 1990), demand information is presented by specific teaching area (e.g., auto mechanics, electronics, carpentry, and drafting).

In the business education area, Stocker (1989) conducted the sixth in a series of studies focusing on business education in the United States. The study included information about business teacher supply and demand as perceived by business education departments in universities. This report contains useful trend information for business education since data from all surveys are included.

RESEARCH CONCERNS AND HOW THEY MAY BE ADDRESSED

There are several research concerns regarding vocational teacher preparation, qualifications, and demand. First, it is clear that no comprehensive data base exists which encompasses the area in a logical and functional manner. As Lynch (1988) indicates, "Data is needed about vocational teacher education: Its scope, administrative structure, design, curriculum, standards, faculty, students, and—perhaps, most importantly—its actual and perceived [in] effectiveness." Clearly, some time will pass before such a comprehensive data base is developed. However, it is recognized that such information is needed for national policy and accountability purposes (Hoachlander, 1989).

Several additional concerns and potential constraints emerged during the preparation of this paper. These concerns are listed below, as they have to some extent been discussed earlier in the paper.

1. Teacher mobility, which is to some degree a reflection of the range of job opportunities available to vocational teachers (e.g., secondary, postsecondary, adult, business, industry, and government).

2. Variation in state teacher-certification requirements.

3. Range in teacher qualifications (e.g., degreed versus nondegreed teachers, different technical content associated with various vocational teaching areas).

4. Range of teaching settings (e.g., comprehensive high school versus separate vocational school or center versus community or technical college).

5. Heterogeneous nature of vocational teachers (e.g., beginning teachers may be younger or older and may be in their first, second, or third careers).

6. Limited knowledge about part-time vocational teachers and how this group may be best served.

In terms of dealing with concerns in the research process, several suggestions can be made. First, a close look must be taken at teachers in both secondary and postsecondary institutions. It is particularly important to assess the way teachers in these settings interact with each other. This will assist in capturing information about teacher linkages across institutions in relation to activities such as tech-prep programs.

A second suggestion is to examine existing relationships among academic and vocational teachers. For example, do academic and vocational teachers work together in the education of all students? Do they share a common vision? Do they work as members of teaching teams? Do they collaborate on student assignments? This task should be accomplished both within and across institutions (e.g., secondary vocational centers and feeder schools). The hope is that such an approach will capture the dynamics of teachers working together to integrate academic and vocational education.

The third suggestion is that consideration be given to concurrently gathering teacher, student, school, and community information. This could be accomplished by employing a case-study methodology and using communities and/or attendance areas as analysis units. Finally, although data bases in the area of vocational teachers and teaching are lacking, the sources provided in this paper, together with access to currently unpublished data sources (e.g., NCES, AACTE) may provide answers to at least some of the assessment questions raised.

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Performance Standards, Accountability, and the Quality of Vocational Education

Paul T. Hill*

INTRODUCTION

This paper is an expanded version of a briefing presented to the National Assessment of Vocational Education planning conference on March 15, 1991. The paper applies the results of a study of accountability in vocational education, conducted by RAND for the National Center for Research on Vocational Education (NCRVE).

The project on which this paper is based started in early 1990 and will be completed in late 1991. The project focuses on the "to whom" aspects of accountability, trying to understand who needs evidence about the performance of vocational education and how they would use it. NCRVE sees the project as a companion to other activities that examined the "for what" of vocational education accountability, considering the measurement implications of the Perkins Act performance requirements on performance standards and measures.

This paper's message is that the main focus of accountability in vocational education is local, and that the Perkins Act requirements for new performance measures and standards are meant to strengthen local accountability, not to weaken it or to create new channels for direct reporting to the federal government. This conclusion has two implications for the National Assessment's work on accountability. First, the National Assessment should assess the character and health of local vocational education accountability processes. Second, the assessments of the effects of the Perkins Act requirements should emphasize local consequences rather than the building of standard national performance data bases.

This analysis focuses on secondary vocational education, with some excursions to consider issues peculiar to postsecondary education. It relies on the following definition of accountability, as drawn from the briefing at the planning conference:

- Accountability is a relationship between a service provider and anyone who has a well-founded expectation to derive benefits from the service. In vocational education, accountability refers to those processes whereby people who expect to benefit can
    - judge whether their needs and expectations are being met, and
    - determine whether programs should be changed, sustained, or eliminated.
- Accountability runs in several directions:
    - upward, to funders and legislators;

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241

- laterally, to others who educate students; and
- downward, to employers and students.

The remainder of this paper follows the structure of the briefing, and includes discussion of the project's goals and conclusions.

The NCRVE Accountability Project

The goals of the NCRVE accountability project are to

- understand Perkins Act implications for state and local performance measurement and accountability, and

- suggest means of implementing Perkins requirements in order to

  - strengthen local accountability processes;
  - promote program improvement; and
  - provide quality assurance for top officials.

Conclusions

The project results support the seven conclusions listed below and elaborated upon in succeeding pages.

1. The Perkins Act was meant to strengthen accountability at the state and local levels, not to nationalize the design, management, or evaluation of vocational education.

2. The Perkins requirements reflect a concern that local accountability processes, though strong in some places, are weak in many central cities and in other places where education generally fails to meet community needs.

3. Even in those places where local accountability processes are strong, there are important conflicts of interest among local constituencies that justify oversight by state and federal governments.

4. Hard outcomes data, particularly scores on competency tests that reflect true labor market needs, can help compensate for the limitations of local accountability processes.

5. But sole reliance on hard outcomes data can distort local programs and ultimately weaken the performance and credibility of vocational education. Hard outcomes data (and state or national data bases built from them) should be used to supplement, not supplant, local processes of consultation, monitoring, and managerial judgment.

6. Vocational educators take a great risk when they abandon traditional monitoring and management processes in favor of "automated" accountability processes based on formal measures and cut-offs.

7. The National Assessment's research should include a project focused on improving local accountability processes.

Conclusion 1. The Perkins Act meant to strengthen local accountability

A first goal of the NCRVE/RAND project was to understand the motivations of the people who drafted and supported the Perkins Act performance standards and accountability requirements. Interviews with congressional staff members and lobbyists made it clear that no one intended to create a flow of information to Washington that would let Congress or anyone else micromanage vocational education. Nor did the drafters hope to obtain a master data base from which they could derive an unambiguous assessment of vocational education, either nationwide or in any state or locality.

It was clear, however, the members of Congress and senior committee staff were worried about the equality of local programs and uncertain about whether they were being implemented with due concern for the needs of local students and employers. This concern was based on business leaders' complaints about the quality of high school graduates (including, but not specific to, graduates of vocational programs), and on congressional staff members' perceptions that some local managers had become bureaucratic, deadened by routine, and more concerned with protecting staff jobs than with meeting local labor market needs. These concerns were based on impressions and testimony; nobody knew exactly how serious they were. However, congressional friends of vocational education found themselves on the defensive, with no strong evidence to support their positions.

The Perkins Act requirements were meant to reassure critics that the legislative supporters of vocational education were serious about quality, and that lax or self-indulgent program administration would not be tolerated. However, these legislators did not want to set themselves up as the remote ultimate judges of local processes. They wanted, instead, to create a framework of processes which would guarantee that local quality issues received due attention at the local and state levels.

These concerns were similar to the initial motivations for the evaluation requirements in ESEA Title I (now Chapter 1). As Robert F. Kennedy, the original drafter of the Title I requirements explained, the purpose of data and evaluation requirements was to ensure that local parents and citizens would know how well they were being served by federal money. Armed with that information, local people could press for improvements when necessary. (Only later, when researchers sought to draw national estimates of the productivity of Title I, was the original local purpose of the evaluation requirements forgotten).

The drafters of the Perkins requirements have had decades of experience with Title I/Chapter I, and did not intend to stimulate another futile search for a national bottom-line assessment of a program that by design is local in goals, services, and outcomes. To the contrary, they intended to set up processes that would make local program performance manifest to local stake-holders.

Conclusion 2. Local processes vary in quality

In some localities, the quality and relevance of vocational education programs are ensured through such processes as

- employer advisory committees,

- tracking employer needs through student placement,
- attracting students via job placement success,
- employer certification of the need for new courses, and
- eliminating or upgrading courses with low enrollment and/or poor placement records.

However, many local processes have serious weaknesses, including

- "routine following" mentality among providers,
- lax tracking of student placement,
- low expectations for student skill attainment and job placement,
- little capacity to project future labor force needs, and
- inattention to needs of transient, low-income, or minority students.

Conclusion 3. Conflicts of interest among local constituencies justify state and federal oversight

In very simple communities with only a few employers it is possible for healthy accountability processes to work in everyone's interest. The range of employment opportunities is finite and generally understandable, and all employers can take part in the normal processes of consultation. In larger communities, however, only a fraction of employers can be directly consulted. Larger and longer-established employers are naturally more likely to be consulted than very small or new employers. In some places, this means that important employer interests—the small firms that are the normal employers of new high school graduates and the newer firms that may rely on unfamiliar technologies and offer unconventional career opportunities—may be poorly represented.

Conflicts of interest among students and employers may also arise. Established employers may want students prepared for traditional low- and moderate-skilled jobs, which might block students from obtaining jobs with other employers, possibly in other localities.

A final possible conflict of interest may arise between students and educators. As Oakes has shown, some school systems emphasize college preparatory education for all but the lowest-achieving students, and others regard vocational education as the only appropriate placement for low-income minority students. In those cases, vocational education can gain a reputation for being, in Oakes' words, a dumping ground for students with poor academic preparation. Educators can therefore adopt low expectations for students and offer them unchallenging coursework that does not prepare them for rewarding careers. A similar sequence of events appears to be developing for immigrant students who come to the United States either unschooled or years behind their U.S.-educated peers. Older immigrant students tend also to be assigned to less challenging courses that prepare them only for low-skilled, dead-end jobs.

These conflicts of interest justify oversight by state and federal governments. The state needs to protect its broader economic future against the narrow localism and short-time horizon that can dominate local accountability processes. The state and federal governments need to help disadvantaged groups that lack the leverage to protect themselves at the local level.

Conclusion 4. Competency test scores and other hard outcomes data can help compensate for local process limitations

Local actors' horizons can be expanded in several ways. Information about future economic trends can help employers anticipate their own needs. Information about the needs of broader regional, statewide, or national labor markets can also help educators and students understand opportunities that might not be evident locally. Lists of competencies required by advanced employers—and testing systems to help students and educators assess their performance in light of those needs—can create demands for program improvement.

Competency-based systems such as those being built in Oklahoma can both raise standards and provide concrete guides to program improvement. Such systems derive from lists of needed competencies created by knowledgeable employers. When these lists are used as the basis for curriculum development, student testing, and certification, they both guide the vocational education policy and build employers' competence. They also provide external standards against which program quality and student access can be evaluated.

Conclusion 5. Hard outcomes data should supplement, not supplant, processes of consultation and monitoring and the use of managerial judgment

All educational outcomes are products of multiple causation. Test scores, graduation rates, dropout rates, and student placement results can reflect on the quality of educational services. However, they can also be strongly affected by other factors independent of the quality of training and instruction students have received. Average outcomes for any group of students are affected by the group's composition. Groups selected on the basis of high ability or superior prior experience are likely to have more positive outcomes than less elite groups. Student-specific outcome measures (e.g., change scores) are less sensitive to group composition, but they are difficult to relate to a particular educational program. Students who have many positive educational experiences over the period during which change is measured are likely to get better change scores than students who had mixed or negative experiences. Thus, for example, students experiencing a given vocational program may have different change scores, depending on the quality of education they receive outside vocational education.

The outcomes of greatest interest in vocational education are also affected by local labor market conditions. Vocational education students' job placement rates, hours of work, income, and rates of career progression can be profoundly affected by the demand for particular kinds of labor, which is in turn determined by the current level and composition of local economic activity.

These complications do not rule out the use of hard outcomes data. However, they do illustrate the many ways in which such data can foster misunderstanding of program performance. Outcomes data are indispensable, but only when they can be interpreted in light of supplementary information about student characteristics and prior educational preparation, the quality of educational programs that complement vocational education, and local labor market conditions. In light of such contextual information, programs can be fairly assessed and performance deficiencies can be readily identified.

Without contextual information, vocational educators are forced to do everything possible to raise their outcome scores. This promotes "gaming" to increase scores (e.g., by "creaming" the student population or finding ways to discount the outcomes of less able students). It also misleads policymakers, frequently causing them to castigate local providers whose programs are in fact performing reasonably well in light of local conditions.

Conclusion 6. Vocational educators take a great risk when they abandon traditional monitoring and management processes in favor of "automated" accountability processes based on formal measures and cut-offs

Testing and formal outcomes measurement are not cheap, but they are far less labor intensive than direct program monitoring and careful accreditation of institutions. During a period of fiscal stringency, many states are tempted to cut their staffs and abandon direct oversight in favor of automated systems of measurement.

These systems can be major assets, both for state and national officials responsible for vocational education and for actors at the local level. Only such "hard" measures can provide clear comparative information about the priorities and average outcomes attained by different localities and programs. However, as suggested above, hard outcomes data alone can lead to false attributions of causality and can mislead policymakers. State and federal officials may overlook crucial local conditions and reward or punish programs whose outcomes are largely determined, for good or ill, by uncontrollable local circumstances.

Assessment and reward systems that are insensitive to local conditions can distort local programing and practice. If local program administrators and instructors become preoccupied about how they will score on standard outcome measurements, they often start neglecting their local accountability processes in favor of "gaming" the centralized reward system. In the short run, this can lead to the abuses mentioned in the previous section. The long-run consequences can be even more negative: Local providers of vocational education can come to de-emphasize the processes whereby they tailor vocational education to the needs of local students and employers. As we have seen in other major federal education programs (e.g., ESEA Chapter I), this leads providers to separate and distinguish the services they provide from services funded by other sources.

As federal- or state-funded services become more distinctive and auditable, they also do less to complement and strengthen the basic educational programs provided at the local level. This process ultimately reduces the productivity of the educational system as a whole, because students' performance in any one area is affected by the quality of their preparation in all areas.

Because job competencies, placement rates, and other hard outcomes of vocational education are joint products of vocational and general education, vocational education cannot afford to employ an accountability system that ultimately weakens overall local educational performance. Vocational education cannot produce positive outcomes if students' general education preparation is abysmal. In education, a falling tide lowers all boats. Local citizens, employers, and civic leaders faced with a poorly performing education system seldom make fine distinctions among programs. Similarly, national business leaders and others who decry the poor level of student preparation are not able to disentangle vocational from other forms of education; they only know that the system is failing them.

When faced with complaints about system failure, top-level policymakers (Congress, state legislatures, presidents, governors) demand accountability. However, they mean systems accountability, not separate auditing of the effects of different programs. If the response to the call for accountability is to further separate educational programs from one another, system performance will continue to decline, with increasingly negative consequences for vocational education's reputation and public support.

The bottom line is that vocational education must become an integral part of the local educational system, and its accountability system must emphasize meeting local needs. Standardized outcome measures can strengthen the local accountability process if they give local parents, employers, and community leaders objective information about local program outcomes. But if they are used in ways that weaken local accountability, standardized outcome measures can ultimately impair local program performance and further damage the local and national reputation of vocational education.

A national data base of standard outcome measures can only accelerate the centralization of accountability in vocational education. Local providers will assume that such a data base is a precursor to a system of centrally administered rewards and punishments, and act accordingly. National policymakers may not want to micromanage local or state programs, but news accounts drawn from the national data base will drive them to do so. In general, a national data base does not solve the problem of accountability in vocational education, and it threatens the performance of local programs. It is an example of a tool that determines its own use. If we do not want the consequences of a national outcomes data base we must avoid building one. The recommendations in the next section show how the National Assessment can help construct and build support for an alternative.

Conclusion 7. Recommendations to the National Assessment

Given the intense interest in better measures of vocational education outcomes, it is safe to assume that the National Assessment will monitor and assess the most advanced development efforts. The theme of the author's recommendations is that the National Assessment should also assess the status of the processes, particularly at the local level, whereby accountability takes place. The recommendation is for a set of projects designed to:

- Develop a national picture of the status of local accountability processes. This could be accomplished via
  - A representative survey of school systems and postsecondary institutions; and
  - Intensive case studies of a subset of systems and institutions, focusing on the character of local accountability processes and their effects on vocational education programs.
- Study state efforts to strengthen links between local providers, employers, and parents.

- Characterize strong vs. weak local accountability processes and strong vs. weak state efforts to promote those processes.

- Convene a conference to discuss
  - How states and the federal government can identify strong and weak local accountability processes;
  - What the federal government can do to help states monitor and assist local processes; and
  - How state and federal data mandates can support, not detract from, local accountability.

Participants at the proposed conference should include vocational educators, state legislators, and representatives of state and local business groups which have made significant investments of time and money in state and local education reform efforts. Business association representatives (e.g., the Chamber of Commerce) should take a back seat in this discussion. The purpose is to understand local business views of accountability and performance, not nationally homogenized views that encompass multiple agendas.

This proposal is for a problem-solving project, not a data collection and analysis effort using standard methods. It is expensive because it requires significant case study work at the state and local levels, and it is labor-intensive because National Assessment staff must ultimately draw their conclusions through open consultation. It also puts the assessment staff in the middle of local relationships that may be emotionally charged and controversial. The compensating advantage is that the National Assessment will thereby help to emphasize the inherently local nature of accountability and create a local perspective which ensures that new outcome measures do not lead to a destructively centralized accountability system.

Integrating Academic and Vocational Education: Guidelines for Assessing a Fuzzy Reform

Cathy Stasz and W. Norton Grubb*

The 1990 Amendments to the Carl D. Perkins Vocational Education Act of 1984 require the National Assessment of Vocational Education to evaluate "the extent and success of integration of academic and vocational education." While research efforts by the National Center for Research in Vocational Education (NCRVE)[1] and others (e.g., Adelman, 1989) reveal much about current efforts to integrate academic and vocational education, it is still a fledgling reform, fuzzy in its intentions and methods. Integration means different things to different people and reform efforts vary widely, from fairly simple course changes to efforts that effectively restructure the high school. The National Assessment's challenge, then, is to conduct a credible evaluation of the potpourri of reforms that call themselves "integration."

This paper, written to support the National Assessment's charter, has three goals:

- To examine the principle themes and research issues related to integration of academic and vocational education.
- To identify available data on integration and to suggest data gaps the National Assessment research might fill.
- To address problems the National Assessment's evaluation of integration might encounter.

In the first section of this paper, we provide some background on the integration "movement" by examining why this reform has caught the interest of policymakers, educators, and academics. We then discuss briefly what states and schools have been doing to integrate vocational and academic education, and we advance a more coherent definition of integration on which to base current and future research. Section two presents short- and long-term research questions for the National Assessment agenda, and discusses the availability of data and the data needs for answering these questions, in both secondary and postsecondary institutions. We also outline specific research studies the National Assessment might carry out, and address problems the National Assessment might encounter. Finally, we present conclusions and recommendations.

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[1] See Grubb et al. (1991), Bodilly et al. (forthcoming), Beck (1991), Plihal (1990), and forthcoming work by Grubb and Kraskouskas on postsecondary forms of integration; Jerry Pepple on applied academics courses; George Copa and Robert Beck on the history and philosophy of integration; and June Schmidt on teacher training.

WHAT'S ALL THE FUSS ABOUT INTEGRATION?

Integration has captured the interest of educators, employers, and academics, each of whom sees it as a potential solution to specific problems. Critics of vocational education point to lowering enrollments, which some interpret as the result of a narrow vocationalism—an emphasis on job-specific skills—that is no longer relevant to the new workplace. Lower enrollments also reflect increased academic requirements for high school graduation, since vocational courses are electives not required for graduation. For this group, integration can help in several ways. An infusion of academic content in vocational courses can increase their rigor enough for them to be counted as required courses and can help prepare students more broadly for employment where requirements are constantly changing. In Ohio, for example, new "applied math" courses are team-taught by vocational and academic teachers, and students receive mathematics credit for the courses. The introduction of applied math, applied communications, and other similar courses reduces time devoted to the specific skill training that previously dominated the vocational program, and aims to provide students with a broader education.

Employers have claimed that new job entrants lack basic skills or need different skills (problemsolving, teamwork, communication) to succeed in the high-tech workplace of the future. For this group, integrated courses would give vocational students more basic math than they would have otherwise, thus increasing their basic skills. Applied communications and other integrated English courses frequently include a variety of communication skills, such as writing letters or dealing with clients and customers. The hope is that integration will move the curriculum in ways that advance these "generic" skills (Stasz et al., 1990) as well as improve basic academic skills.

In the decade since *A Nation at Risk* castigated the public schools, parents, educators, and a flurry of reports have echoed employers' concerns about low basic skills and lack of "higher-order thinking skills" (Resnick, 1987a). As a result, many school reformers seek to make academic learning more meaningful for all students and to prepare them better for the world of work. Although the term "integration" is not typically applied to reforms in academic education, new curricula and theoretical approaches have the flavor of making academic instruction more vocational, or at least more applied. For example, Resnick's (1987b) analysis of how school learning differs from out-of-school learning—in the workplace or throughout one's life—concludes that schooling should "encompass more of the features of successful out-of-school functioning," such as working in teams and using tools to solve real-life problems. Cognitive science researchers propose models of "cognitive apprenticeship" which draw heavily from studies of traditional vocational apprenticeship training (e.g., Lave, 1977) and recommend "situating" learning in contexts that reflect how a skill will be used (e.g., Collins, Brown, and Newman, 1989).

With the advent of the 1990 Perkins Act, policymakers have joined the believers by targeting integration as a major vocational education program improvement that federal dollars will support. The Act requires that every program supported by federal funds "integrate academic and vocational education in such programs through coherent sequences of courses so that students achieve both academic and occupational competencies" (Section 235). Federal legislation, therefore, provides both the resources for integration and the pressure to integrate. However, it is crucial to point out that the various supporters of integrating academic and vocational education (i.e., policymakers, business representatives, reformers of vocational education, and critics of academic teaching) all have different reasons for adopting integration. As a result, integration is not a clear and unambiguous change, but instead is a fuzzy reform that comes in many guises.

The most comprehensive survey of integration reforms to date (Grubb et al., 1991) identifies eight different models, each with several variants, which serve many different goals. (These eight models are briefly described in table 1.) As a result, integration can aim to improve either basic skills or higher-order thinking skills. It can aspire to change the vocational program, concentrating on vocational students, or it can reshape the academic program and encompass all students. It can result in changing the content of a single course, or can restructure the way students learn in all courses.

The way reformers define their goals affects what they do and how they measure their success. For example, if the goal is to improve higher-order thinking skills, the reform will probably focus on curriculum changes and measure students' inferential and problem-solving abilities. If the goal is to improve vocational students' job opportunities, the reform might reorganize vocational offerings in schools and forge better links to the business community, and then measure success in obtaining jobs. If the goal is to develop a broader version of vocational education, one less tied to specific job skills, preparation for postsecondary education *or* employment might be the measure of success.

Research conducted to date suggests that the more ambitious attempts at integration include at least three elements. The first of these is curricular "alignment," which modifies both academic and vocational courses so that academic courses include more vocationally relevant material and vocational courses include more academic or basic content. In the most effective cases, academic and vocational teachers work together to achieve "horizontal" alignment, where coordinated courses are offered at the same time. Vertical alignment involves a coherent sequence of vocational and academic courses over time, rather than (or in addition to) coordination across courses at the same time (Grubb et al., 1991).

Ambitious reforms are also characterized by changes in pedagogy. For example, Ohio has adopted "applied academics" curricula statewide, with vocational and academic teachers often teaching as a team. These curricula, as well as some popular off-the-shelf courses (e.g., Principles of Technology) feature an approach to learning math, physics, and communication skills that seems particularly suited to the learning needs of vocational students. With this approach, projects and lab activities are more frequently used to motivate learning, "academic" instruction is contextualized by its use in occupational settings, and both students and teachers are more active in their approach to learning.[2]

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[2] In the vocabulary developed in Grubb et al. (forthcoming), the pedagogical reforms in efforts at integration usually move from the conventional "skills and drills" methods common in the high school to very different methods we label "meaning-making."

Table 1

Models of Integrating Vocational and Academic Education

	Curriculum Changes	Teacher Changes	Students Targeted	Institutional Changes
1. Incorporating more academic content in vocational courses	Vocational courses include more academic content	Vocational teachers modify courses	Vocational students	None
2. Combining academic and vocational teachers to enhance academic content in vocational programs	Vocational programs include more academic content, in either vocational courses or related applied courses	Academic teachers cooperate with vocational teachers	Vocational students	None
3. Making academic courses more vocationally relevant	Academic courses include more vocational content; sometimes new courses (e.g., applied academics) adopted	Academic teachers (usually) modify courses, or adopt new ones	Potentially all students; in practice, vocational and general-track students	None
4. Curricular alignment: horizontal and vertical	Both academic and vocational courses modified, and coordinated across courses and/or over time	Academic and vocational teacher cooperate; numbers range from two to all	Potentially all students; actual targets vary	None necessary; curriculum teams may foster cooperation

	Curriculum Changes	Teacher Changes	Students Targeted	Institutional Changes
5. Senior projects	Seniors replace electives with a project; earlier courses may change in preparation	None necessary; teacher may develop new courses or modify content to better prepare students; academic and vocational teachers may collaborate on both curriculum and students	All students	None necessary
6. The Academy model	Alignment among academy courses (English, math, science, vocational) *may* take place		Usually potential dropouts; sometimes students interested in specific occupational areas	School-within-a-school; block rostering; smaller classes; links to employers
7. Occupational high schools and magnet schools	Alignment among all courses may take place, emphasizing the occupational focus	All vocational and academic teachers assigned to an occupational school or magnet within a school; collaboration facilitated	Students interested in specific occupational areas	Creation of a self-contained occupational school or magnet school
8. Occupational clusters, "career paths," and majors	Coherent sequences of courses created; alignment may take place among courses within clusters	Teachers belong to occupational clusters rather than (or in addition to) conventional departments; collaboration facilitated	All students	Creation of occupational clusters; enhancement of career counseling; possible cluster activities

Finally, many schools attempting integration have changed their organizational structures in significant ways. Some have abandoned the traditional department structure in favor of broad occupational clusters encompassing a variety of related occupations (e.g., transportation or health occupations) which house both vocational and academic teachers. Others, such as the "academy" model, are organized as schools-within-a-school. Still others "block" classes to permit longer time periods for vocational labs.

While some states and schools have attempted ambitious reforms for integrating academic and vocational education, most have opted for fewer changes. By far, the most pervasive way to integrate involves adopting applied academics courses "off the shelf," especially principles of technology, applied math, and applied communication. Even so, this can involve a major effort on the part of teachers, particularly where they choose to develop their own curriculum materials or must extensively revise off-the-shelf materials. It is also important to see curriculum integration as a dynamic process in which schools start with simple changes and then move to more complex reforms. In this vision, applied academics courses represent a reasonable first step toward broader reforms.

The Integration Dilemma

At this point, policymakers, practitioners and researchers (including the National Assessment) face a dilemma. State policymakers must articulate plans for integration in order to receive funds. On the one hand, this provides both the incentive to reform and the resources to do it. On the other hand, the law is not at all specific about what counts as integration, beyond mentioning "a coherent sequence of courses so that students achieve both academic and vocational competencies." The integration "mandate" is further confused by other requirements which focus funding on special needs students.

Where integration has not yet been attempted, practitioners may be searching for models and approaches that comply with the legislation but that also meet local needs and concerns. They often do this in an atmosphere where other local or state reforms may compete with their goals for integration. For example, state graduation requirements may determine whether or not applied academics courses can be counted as English or math credits. Certification requirements may determine which teachers can teach new courses. In some cases, state policy favoring job-specific skill training may collide with the intention in the Perkins Act to stimulate a broader form of vocational education.

The problem of implementing top-down reforms in an area of education that requires local, bottom-up solutions is another part of the dilemma. Integration is essentially a curriculum reform that requires changes in course content and pedagogy. Mandates cannot create the elements that promote innovation in schools—local vision, leadership, sustained support, and financial and other resources.

The dilemma for researchers is how to evaluate current and planned efforts when integration remains a reform for many purposes, with multiple goals and various expected outcomes. Perhaps more importantly, how can the National Assessment keep sight of the *potential* results of integration, not just the simple models or narrow reforms that seem to dominate practice at the moment? These potential outcomes include increased basic skills, increased theoretical and applied learning for all students, and increased breadth of postsecondary opportunities. These potential benefits of integration will take a long time to emerge, certainly longer than the current National Assessment charter.

RESEARCH ISSUES

Obviously, the National Assessment must first focus its efforts on the short-term question: What are institutions doing in response to the new Perkins Act? In the following sections we propose a set of questions and a research strategy for addressing that issue in both secondary and postsecondary institutions. We also address general research issues and problems that affect the National Assessment agenda.

In addition to the short-term question, the assessment studies should be sensitive to the long-term questions: Can we articulate effective models of integration that can be emulated by schools? Is integration a good idea? Eventually, researchers and practitioners must address the effectiveness of integration reforms. In the meantime, research can help articulate ambitious models that can potentially reform education in several ways (e.g., by increasing basic skills and academic content, by improving academic teaching, by increasing collaboration among teachers and enhancing their excitement about teaching and learning, by developing a more coherent curriculum, by preparing all students better for education and work, and by breaking down patterns of tracking and segregation).

Secondary School Integration Issues

At the secondary level, the National Assessment should be interested in two questions: 1) What state policies govern integration? 2) What are schools now doing to integrate? At the state level, existing data from NCRVE research (e.g., Grubb et al., 1991; Bodilly et al., forthcoming; McDonnell and Zellman, forthcoming) show wide variation in state policies and few ambitious reforms. For example, preliminary results from NCRVE's 50-state survey show that many states have adopted the commercially available "applied academics" curriculum as the major vehicle for integration. This reform essentially changes what is taught in individual courses and typically only affects vocational students. Ohio has mandated applied academic courses in its vocational program, but most teachers are developing their own curricula, and this is the only example of a statewide approach to integrating academic and vocational education. The most ambitious models, including 4-year vocational magnet schools and school-within-a-school models, are primarily the result of local reform efforts, not state initiatives.

Under current regulations, states must submit draft plans by June 1991. The National Assessment could extend current knowledge by conducting a survey of state policy that asks how integration is addressed in the plan, both currently and in projected activities. The major research issue here is how ambitious the plan is in its attempts to integrate academic and vocational instruction. Does it opt for small changes or large ones? Does the plan include academic teachers and students, as well as those from the vocational side? Are there existing state policies or practices that hamper or limit integration, such as graduation requirements that threaten vocational education enrollments, teacher certification requirements, or course approval procedures that impede development of new courses? Does the plan restrict the concept of integration or promote certain approaches over others? How is the state using technical assistance and other forms of consultation to help districts formulate their own approaches to integration?

With respect to how local schools respond to the integration mandate, we know from current research that approaches are enormously varied. Even so, they often lack a clear definition of or purpose for integration. Even in states with clear policies, such as Ohio, local implementation practices and the outcomes they produce differ. In our view, the only way to understand what schools are doing in response to the mandate of the Perkins Act is to visit a large number of schools; that is, to undertake some carefully structured case studies of secondary schools.[3]

Secondary school case studies

The case studies we envision should include districts with both comprehensive high schools and area vocational schools, as states vary in where and how secondary vocational education is provided. The sample can either be random or purposive, but in any case it should include some states and districts where interesting efforts are known to be taking place. In addition, because the Perkins Act directs federal aid to districts with high concentrations of special needs students, the sample should include sufficient numbers of such districts—including large urban school districts dominated by low-income and minority students—to see what form integration has taken. Intensive visits over several days are necessary to visit classrooms and interview the key actors, including principals, teachers, and students.

Interviews and classroom observations should focus on answering several questions: What is the goal of integration in this school or district? What model is being implemented to reach that goal? What are the implementation plans or problems? What kinds of changes will integration mean for students, teachers, academic instruction, or guidance and counseling? What long- and short-term changes are expected? How will the effort be evaluated to determine if interim and long-term objectives are met?

This case study of about 30 locations should be essentially descriptive, not evaluative. Below, we discuss several reasons why outcome evaluations would be premature, as well as methodologically unsound, in the context of the National Assessment.

Postsecondary Integration Issues

At the postsecondary level, the National Assessment will be interested in state policies that affect integration and in institutional responses to integration as a means of program improvement. Much less is currently known about state policy and local implementation of integration reforms at the postsecondary level than at the secondary level, partly because integration has been a much less urgent reform at the postsecondary level. (Indeed, while the requirement in the Perkins Act to integrate programs funded by federal resources extends to postsecondary institutions, this looks like a secondary reform that only by chance applies to postsecondary education.)

Preliminary results from an NCRVE survey of about 300 community colleges and technical institutes (Grubb and Kraskouskas, forthcoming) indicate that the dominant form of integration consists of requiring vocational students to take general education classes. A few institutions are developing new curricula, such as vocational or technical mathematics and technical writing, and others are using "Writing Across the Curriculum" and "Reading Across the Curriculum" to change the content of vocational as well as academic courses. About one-fourth of those surveyed seemed to be on the road to more ambitious reform, and were, for example, designing new interdisciplinary courses. With only spotty data currently available, the National Assessment should consider a survey of states to determine current policies for integration and methods for interpreting or enforcing the integration requirement.

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[3] In our research for NCRVE, we found it impossible to rely on written or oral descriptions of what schools are doing; for more information on these efforts, see Grubb et al., 1991, and Bodilly et al., forthcoming. Even brief site visits may fail to reveal the real intentions and effects of complex reforms.

Postsecondary survey

We suggest a survey of a random sample of about 20 states that devote a relatively high percentage of their Perkins funds to postsecondary education. (Some states provide so little aid to postsecondary institutions that it would be foolish to expect these resources to have any effect.) Within these states, locations with a mixture of community colleges, area vocational training schools, and technical institutes should be sampled. Rather than an intensive case study, we envision a lower level of effort, precisely because there seems to be less ferment at the postsecondary level. The survey of local practices in response to the new Perkins Act could be conducted over the telephone, with selected site visits to locations which show some activity in the area of integrated programs.

The questions of interest overlap those aimed at secondary schools, but at a different level of detail. That is, the major focus should be on the state and institutional level, rather than on classrooms and teaching practices. Of particular interest here are the arguments and rationale offered for integration at the postsecondary level. In secondary schools, integration has been primarily a curriculum reform, justified by the need to better prepare students for work or postsecondary training and education opportunities. This argument may still be valid at the postsecondary level. For example, a recent analysis of health care technicians found that hospitals were satisfied with the technical qualifications of recent graduates but unhappy with their communications skills, suggesting that incorporating more academic content in health-tech programs would improve training (Hudis et al., 1991). In addition, curriculum integration at the postsecondary level has the potential to join together parts of the community college that have been separated (e.g., the academic and the vocational sides or the vocational mission and the remedial role). However, there is much less clarity about the purposes of integration at the postsecondary level, and the issue of whether integration is desirable—or whether postsecondary programs should be quite specialized—should remain an open question.

General Research Issues and Problems

The National Assessment must consider several general research issues before determining a course of action. The first is the problem of timing. The initial year under the 1990 Perkins Act is 1991-92. We anticipate that states and localities will spend a great deal of this year in initial planning and start-up activities; implementation of new programs may not occur until the 1992-93 school year. The earliest we might expect to see changes is 1993-94. Indeed, with a dynamic process, reform might reasonably take 5 or 6 years: year one would be involved in planning, year two would begin the process of change with the ninth grade, years three through five would complete the process of reform (assuming no special barriers or attempts to reformulate the change), and year six would be the first year a complete reform might be in place. However, the National Assessment must make its report to Congress in July 1994. The evaluation should first consider what kinds of changes might be expected within this time frame, rather than prematurely deciding that some efforts have failed. The focus might be on defining interim outcomes (e.g., replacing general science courses with applied academics) or future plans, rather than on "hard" student outcomes.

Evaluating the consequences of integration also poses some technical problems. Programs being implemented under the banner of integration vary widely in their purposes, scope, and stage of development. This situation makes it difficult to identify appropriate control or comparison groups, or to define comparable formative or summative outcome measures. Formal evaluations may not be warranted, given their high cost, the uncertainty about how to measure outcomes, the lack of control groups, and the timing problem (very few programs will be far enough along to expect any substantial outcomes by the time Congress reconsiders the Perkins Act).

Given the importance of understanding the outcomes of integration, it is important to consider a variety of other options. The National Assessment might conduct several focused evaluations. For example, Ohio's statewide applied academics curriculum has been mandated for use in all vocational programs and is already being used in many schools. This creates a natural experiment where sites with and without this curriculum—in various stages of implementation—can be compared. (For example, ongoing NCRVE research in Ohio suggests that larger schools have more resources and more flexibility in implementing the changes associated with applied academics than do smaller schools.)

A second target for focused evaluation is the off-the-shelf applied academics curricula developed by CORD/AIT, which serves as a main vehicle for integration in many states. An independent evaluation might examine the variations in implementing these courses, the teaching practices or other changes they affect, and how they serve local implementation goals. Ongoing NCRVE research indicates that vocational teachers often reject these materials as too "generic" or spend a considerable amount of time adapting them to be more applied to a particular occupational area.

Third, longitudinal study of some long-standing programs might be considered. Some exemplary schools, identified in NCRVE work and other studies, are graduating students from integrated programs. These students could be followed up to examine their postsecondary options and choices and how integration affected them.

Finally, a synthesis of existing evaluations might shed light on student outcomes. Two applicable studies are David Stern's research on the California Peninsula Academies (Stern et al., 1988, 1989) and Robert Crain's NCRVE study of magnet schools in New York. Although previous research is not without its flaws, it provides a starting place for synthesizing what is known.

CONCLUSIONS

In our review of current efforts to integrate academic and vocational education (based primarily on ongoing research by NCRVE), we have drawn several conclusions. First, while integration embraces a varied range of reforms, most schools have so far opted for minor course-level changes. The education community needs to develop a clearer vision of what integration can potentially accomplish. This definition of integration would include at least three elements: vertical or horizontal alignment of courses; changes in pedagogy; and changes in organization (e.g., collaboration between academic and vocational teachers). Research should identify models that can be emulated by local institutions, based on local goals and needs. Single approaches or mandates will not suffice.

From NCRVE research and other sources, available baseline data (both case studies and surveys) describe various models of integration and current state policy at the secondary level. Much less information is available at the postsecondary level, but some studies are underway that can be built upon. New data collection at both levels is feasible (this paper has outlined studies for each level). Research should focus on current and future planning and implementation, since it is too early to expect much in the way of student outcomes. However, there are some opportunities for evaluating ongoing programs more formally and for synthesizing recent and current evaluation research.

Several problems that may hamper attempts to evaluate the success of integration have been identified. First, there is a timing problem. New programs will not be in place before 1992; changes cannot be expected until 1993, if then. Technical problems arise in defining feasible comparison or control groups and outcome measures, especially when programs are so varied in practice. Finally, conceptual problems arise in addressing the long-term question of whether integration is a good idea. While current conceptions of integration may make sense at the secondary level, other conceptions, still to be articulated, may apply to postsecondary integration reforms.

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Impact of Education Reform on Vocational Education

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PERSPECTIVE

Since 1983, educators have been exposed to a plethora of education reform initiatives and activities. By now, most of us have come to realize that the impact of reform on vocational education comes in a variety of packages. My own perspective on this topic has been influenced by two experiences. First, my 8-year involvement in the statewide evaluation of vocational education programs in Virginia, as required through the Perkins Act, allowed me to witness the flow of Perkins' legislative requirements through the state department of education and on to the local level of program delivery. At the same time, education reform initiatives were implemented at a variety of levels. For instance, the state department of education called for strengthening high school graduation requirements, localities revamped their curricula and opened magnet schools, and teacher education reform required colleges and universities to restructure their teacher training programs. In short, a partnership between education reform and vocational improvement quickly became a complicated matter.

The second experience came through a research project (funded, in part, by the National Center for Research in Vocational Education [NCRVE]), in which my colleagues and I at Virginia Tech developed a longitudinal data base on high school and vocational enrollment patterns and a concurrent compendium of qualitative data or "journals" on the implementation of reform policies for each state. This study, the Vocational Enrollment Patterns Study (VEPS), was initiated to explore or "map" statewide trends in vocational participation vis-a-vis education reform. What we have learned so far in this study is that secondary school reform has moved well beyond the single issue of high school graduation requirements and into the broader, more complex issues of delivery, choice, and outcomes. Moreover, for vocational education, being in the mainstream of these reforms is far more advantageous than being in the position of playing "catch up."

REFORM FRAMEWORK

Public demand for education reform has resulted in implementation of new or revised education policies which appear to have implications for administration and delivery of vocational education programs. At the same time, the role of vocational education in the secondary school has come under increased scrutiny, and questions have been raised about the delivery and structure of programs. However, there are many states that have yet to realize the full impact of reforms or of the strategies put into place to restructure or revise vocational programs. In fact, the VEPS' initial emphasis was high school graduation requirements—an emphasis which quickly evolved into the broader picture of educational reform. For example:

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1. The issue was not simply *increased* graduation requirements, but more highly prescribed graduation requirements. While graduation requirements in some states did increase, other states simply made the existing number of requirements more prescriptive by designating the distribution of all required units. In either case, requirements for electives were often decreased, so that in order to complete a vocational program, students had to enroll for more credit hours than were required for graduation. According to many state vocational directors, this has presented a particular problem for at-risk students.

2. In other states, high school graduation requirements alone were not the problem. Rather, the combination of these requirements with postsecondary (both 2-year and 4-year) entrance requirements created difficulty. Students who desired to continue their education beyond high school had to consider both high school graduation requirements and postsecondary entrance requirements in their decisions as to what courses to include in their curricula. For the most part, postsecondary entrance requirements precluded the choice of vocational education as an elective and the completion of a vocational program.

3. State secondary school accreditation standards were another area of reform having an impact on vocational education. Changes in standards affected the *availability* and *scope* of programs within the schools which, in turn, affected student access to vocational education. In some cases, vocational education appeared to benefit. For example, standards requiring a predetermined scope of vocational programs within each school (rather than simply access to programs within the school system) appeared to facilitate students' ability to participate in vocational education. In other cases, accreditation standards increased the number or scope of educational programs to be offered in the schools, but reference to vocational education was left out altogether. Schools had to decide what to do with vocational education given their capability to satisfy the new standards.

4. Teacher certification was another issue affecting vocational program delivery. Implementation of new certification requirements affected some states' staffing ability in vocational education. This was particularly true in the trade and industrial areas. In some cases, vocational education positions—and subsequently, programs—were lost.

5. Parental choice policies have been introduced in a number of states. While still a fairly new reform initiative, one potential outcome is that as schools compete with each other to keep or attract students, retention of vocational education in the curriculum may be threatened. The impact of shifts in enrollments as students and parents choose among schools and, consequently, changes in program funding, quickly become issues of concern. Minnesota was one of the first states to raise this issue as a distinct problem for secondary vocational education.

6. Equitable funding formulas among localities in a number of states (e.g., Kentucky, Tennessee, Ohio, and Alabama) have become both a reform and a legal issue. The issue in these cases often hinges on the availability of resources for academic positions and instruction. Consequently, the long-term impact of this issue on elective areas such as vocational education remains to be seen.

In a recent study conducted by Chris Pipho for the Education Commission of the States (Pipho, 1991), the progress of reform in all 50 states was reviewed. Pipho delineated some issues in implementing education reform policies which have implications for vocational education as it tries either to initiate its own reform strategies or to survive the transitions within a general reform environment. Briefly, these issues point to problems of vision and leadership in the reform arena. Pipho's findings on these two points are summarized below:

- The lack of a clear, coordinated vision for reform within states has resulted in inconsistent support and a lack of direction for school leaders otherwise willing to "change." This schizophrenic approach to implementation at a variety of levels has resulted in reform activities which are more complicated and competitive than they are effective and are certainly more difficult to assess in terms of their impact on student learning and outcomes. As Pipho states, "...governors now say that the reforms are uncoordinated and beginning to trip over one another...." State leaders are beginning to question the success rates for different programs, how programs differ from one another, and "...who is coordinating the various reforms throughout the state" (p. 422).

- Related to this lack of vision is the issue of leadership. The lack of coordination among reforms sends inconsistent messages to school leaders and inhibits their willingness to commit themselves to specific programs. Moreover, there is a lack of individuals who know how to lead in reform settings, which exacerbates the already complicated, uncoordinated nature of reform implementation.

VOCATIONAL EDUCATION SCENARIO

Not all vocational programs are created equal; some are in a better position than others to meet the demand for reform. Technology education is a good example, but often this program tends to straddle the fence in terms of its identification with vocational education. In the administration of VEPS surveys over the last 4 years, it became increasingly difficult to determine how to differentiate what was once called "industrial arts" from what is now supposed to be referred to as "technology education." Some states still retain the title—and presumably the programs—of "industrial arts." Others have incorporated industrial arts enrollments in the occupational program enrollments for trade and industrial education. Still others have made the change to "technology education" but also report enrollments in programs called "technical education" or "technology preparation." Most often, these latter programs are 2+2 programs articulated with postsecondary education.

Another complication is the division of vocational education into various teaching areas, some of which have more or less acceptability in terms of being approved as alternatives for academic credit. Among states reporting the acceptance of vocational courses as alternatives, business math, agricultural science, and principles of technology were referenced most often. It should be recognized that these are not "hard core" vocational courses and that awarding credits through integrated vocational curricula appeared to be a limited option for students seeking to obtain vocational training while also satisfying their academic needs.

The extent to which educators within vocational teaching areas work independently of each other affects the overall capacity of vocational education to initiate its own reforms or make the transitions required of all programs in the education reform environment. That "quality of separatism" Wirth (1973) described as characterizing vocational education's image in the secondary schools manifests itself within, as well as outside, vocational ranks. In this regard, efforts at integrating vocational and academic curricula could prove to be an effective vehicle for enabling vocational education to participate comprehensively and jointly in the curricular transitions accompanying educational reform.

Leadership in vocational education is an issue unto itself. It has demanded increased attention in recent literature and research efforts (see research conducted by Curtis Finch and his paper in this publication). The question continues to be: What is the capacity for vocational education to participate in the leadership of education reform in general and, subsequently, in vocational education's own reform? State vocational education directors are not always in the upper tier of state administration where they would be in a good position to coordinate or assert vocational education initiatives. Local administrators often have an array of responsibilities and are faced with asserting vocational leadership while also dealing with any number of issues or problems. Consequently, where general education reform has been complicated, vocational reform and the leadership required to implement reform become, at best, difficult.

Another issue raised repeatedly by vocational directors in the VEPS surveys concerns the various roles vocational education is asked to serve. In a recent issue of the *Kappan* devoted to the status of vocational education, John Wirt delineated three ways vocational education could contribute to the goal of reforming education for *all* students: 1) by providing more of the context for learning academic subjects than is currently the case; 2) by providing more opportunities to use knowledge for practical purposes; and 3) by providing students with a broader range of personal, intellectual, and work-related skills than could be provided in traditional classrooms. This theme also runs through the writings of Lauren Resnick (1987) and others. (See Dan Inbar's forthcoming publication on "second chance" in education.) In addition to pointing out the many different ways people learn, both in and out of school, these writers have pressed the education system to provide multiple opportunities for students to obtain and build knowledge. Vocational education would do well to build on the momentum in these writings, but it has a long way to go in being widely accepted as a "second chance" vehicle.

While vocational education is asked to continue to provide occupational skills to all students going into the work force, it appears to be increasingly drawn into serving the needs of special populations in particular (i.e., handicapped and otherwise disadvantaged students, displaced homemakers, adult learners, etc.). While this is a worthy role for vocational education, it sometimes appears to fragment an already struggling program. Combined with the fact that vocational education is an elective program for secondary students, this is a difficulty which lends itself to a program-wide identity crisis.

A final level of complication comes through the interaction of secondary and postsecondary vocational education. When working with the Board of Regents staff of the University System of Georgia, I was made aware of a constant battle over who controlled career programs—the Board of Regents or the Department of Education. Although that was some years ago, I still see little cooperation or coordination within my current home state of Virginia or other states interviewed through the VEPS project. However, in the VEPS surveys, articulation and coordination of secondary and postsecondary programs were mentioned as critical factors in revitalizing vocational education. Combined with ongoing activities in tech-prep, these efforts could be the beginning of stronger, long-term collaborations between these two delivery systems.

IMPACT OF REFORM ON VOCATIONAL EDUCATION

In the VEPS research on longitudinal enrollment patterns in vocational education and concurrent implementation of reform policies/strategies (Strickland, Elson, and Frantz, 1990), the 50 states and the District of Columbia were divided into eight different trend groups. They included four groups (19 states) characterized with *increasing* participation rates in vocational education and four groups (32 states) with *decreasing* participation rates. It was clear from the policy journals developed for each state (compiled from data collected through four VEPS survey administrations) that all states had experienced a variety of education reforms, most notably, changes in graduation requirements. In well over half the states, graduation requirements were cited as being the one factor having the most negative impact on vocational education participation. Factors cited as having the most positive influence on vocational education were academic/vocational curriculum integration and vocational program restructuring.

After the states were grouped into the eight trend categories, the policy journals were reviewed for information common to states within each group. Based on this review, various policy activities or programmatic strategies which appeared to contribute to positive vocational participation trends were identified. These activities/strategies are summarized below:

- Implementation of 2+2, advanced credit, and articulated programs (one vocational director noted that program participation improved through the "aggressive pursuit of secondary/postsecondary agreements").

- Introduction of exploratory, cluster, orientation, or career programs into the middle schools and in grades 9 and 10 in some cases where states' vocational education programs were limited to the upper grades.

- Changes in accreditation standards which required vocational program availability within schools (or at least access to vocational education through local/area vocational centers, which had not been previously required).

- Restructuring of vocational programs and implementation of more flexible scheduling patterns.

- Initiatives in integrating vocational and academic curricula.

- Recognition of vocational education in graduation requirements or of specific vocational education courses as alternatives for required academic credits.

For states in the negative enrollment groups, the issue was not simply evidencing a different set of factors, but was rather a matter of *not* evidencing to the same extent the factors cited for the positive trend groups. However, state vocational directors in these groups did cite several issues which appeared to contribute to negative enrollment trends:

- Exclusive emphasis on academic programs in graduation requirements and accreditation standards.

- The continued delivery of "traditional" vocational programs, multi-year programs, and 3- to 4-hour block programs. (Travel time to regional centers was also a factor.)

- Increased postsecondary entrance requirements.

- Funding caps on personnel positions or units of vocational instruction.

- Decline in high school population and states' economy.

- Lack of secondary/postsecondary coordination, exploratory or orientation programs in middle grades, integrated curricula efforts, and vocational program innovations.

- The image of vocational education as a program primarily for handicapped and disadvantaged students.

(Findings from the VEPS should be regarded as descriptive.)

The perspectives provided in this paper only begin to scratch the surface of education reform's impact on vocational education. By focusing our analysis of education reform's impact on changes in student vocational participation, we overlook other, equally important criteria by which to gauge the success of vocational programs. For example, Utah ties development and delivery of vocational programs to regional labor market demands. Sometimes, the programs needed to contribute to the local work force are not as popular as other programs which might be offered. In such instances, student participation may decline. However, to the extent that regional work force needs are served, the state's objectives for vocational education are met.

THE NATIONAL ASSESSMENT'S RESEARCH AGENDA

Given the complex nature of reform activity among the states, strictly quantitative, "report card" assessments will do little to provide the insights needed about the effects of reform activities on vocational education. The National Assessment research agenda appears to need case studies, formative evaluations, and "how did we get here from there" analyses. The National Assessment should stress the incorporation or blending of qualitative research methods with more conventional quantitative analyses. However, given the time frame, we cannot dismiss the difficulty of initiating and completing qualitative assessments. The recommendation is to use focus groups of state leaders to determine the nature and extent of reform activities within states, and to use case studies at the local level to explore the top-down impact of education reform. Moreover, the hope is that the National Assessment will look at as closely at what does *not* work as at what does work. According to Pipho's study, there is a good deal of evidence that pilot programs often do not transfer well to other sites. Given the complicated and often uncoordinated framework of education reform, we may need to ferret out site-specific applications and ineffective strategies. We also may need to progress toward discovering effective approaches to reform and their subsequent impact on vocational education.

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